SOLICITATION, OFFER, AND AWARD *(Construction, Alteration, or Repair)*	1. SOLICITATION NO. **S-IZ100-12-R-0022**	2. TYPE OF SOLICITATION ☐ SEALED BID (IFB) ☒ NEGOTIATED (RFP)	3. DATE ISSUED March 4, 2012	PAGE OF PAGES 1 of 146

IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.

4. CONTRACT NO.	5. REQUISITION/PURCHASE REQUEST NO. PR1631947	6. PROJECT NO.

7. ISSUED BY CODE	8. ADDRESS OFFER TO
U.S. Embassy **Al Kindy Street** **International Zone** **Baghdad, Iraq**	BaghdadGSOProcBid@state.gov

9. FOR INFORMATION CALL:	A. NAME Desiree Tupper	B. TELEPHONE NO. *(Include area code)* ***(NO COLLECT CALLS)*** BaghdadGSOProcurement@state.gov

SOLICITATION

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder."

10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS *(Title, identifying no., date):*

RECREATION CENTER METAL STAIRWELL AT THE U.S. EMBASSY BAGHDAD, IRAQ.

SF-1442, Solicitation, Offer and Award
A. Price
B. Scope of Work
C. Packaging and Marking
D. Inspection and Acceptance
E. Deliveries/Performance
F. Administrative Data
G. Special Requirements
H. Clauses
I. List of Attachments
J. Quotation Information
K. Evaluation Criteria
L. Representations, Certifications, and other Statements of Offerors or Quoters

11. The Contractor shall begin performance within **5** calendar days and complete it within 55 calendar days after receiving ☐ award, ☒ notice to proceed. This performance period is ☒ mandatory, ☐ negotiable. *(See _____.)*

12A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS? *(If "YES," indicate within how many calendar days after award in Item 12B.)* ☒ YES ☐ NO	12B. CALENDAR DAYS 10

13. ADDITIONAL SOLICITATION REQUIREMENTS:

Sealed offers in original and **1** copies to perform the work required are due at the place specified in Item 8 by **12:00 noon on March 20, 2012** local time . If this is a sealed bid solicitation, offers must be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.

An offer guarantee ☐ is, ☒ is not required.

All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by referenced.Offers providing less than **90** calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.

OFFER *(Must be fully completed by offeror)*

14. NAME AND ADDRESS OF OFFEROR *(Include ZIP Code)*	15. TELEPHONE NO. *(Include area code)*
	16. REMITTANCE ADDRESS *(Include only if different than Item 14)*
CODE	

17. The offeror agrees to perform the work at the prices specified below in strict accordance with the terms of this solicitation, if this offer is accepted by the Government within _60__ calendar days after the date offers are due. *(Insert any number equal to or greater than the minimum requirement stated in Item 13D. Failure to insert any number means the offeror accepts the minimum in Item 13D.*

AMOUNTS → **USD** _____

18. The offeror agrees to furnish any required performance and payment bonds.

19. ACKNOWLEDGMENT OF AMENDMENTS
The offeror acknowledges receipt of amendments to the solicitation -- give number and date of each

AMENDMENT NO.										
DATE										

20A. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER *(Type or print)*	B. SIGNATURE	C. OFFER DATE

AWARD *(To be completed by Government)*

21. ITEMS ACCEPTED:

22. AMOUNT	23. ACCOUNTING AND APPROPRIATION DATA

24. SUBMIT INVOICES TO ADDRESS SHOWN IN *(4 copies unless otherwise specified)*	ITEM → Section F	25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO ☐ 10 U.S.C. 2304(c)( ) ☐ 41 U.S.C. 253(c)( )
26. ADMINISTERED BY		27. PAYMENT WILL BE MADE BY American Embassy Baghdad

CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE

☒ 28. NEGOTIATED AGREEMENT *(Contractor is required to sign this document and return _1___ copies to issuing office.)* Contractor agrees to furnish and deliver all items or perform all work, requisitions identified on this form and any continuation sheets for the consideration slated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses, representations, certifications, and specifications or incorporated by reference in or attached to this contract	☐ 29. AWARD *(Contractor is not required to sign this document.)* Your offer on this solicitation is hereby accepted as to the items listed. This award consummates the contract, which consists of (a) the Government solicitation and your offer, and (b) this contract award. No further contractual document is necessary.
30A. NAME AND TITLE OF CONTRACTOR OR PERSON AUTHORIZED TO SIGN *(Type or print)*	31.A. NAME OF CONTRACTING OFFICER (TYPE OR PRINT)

30B. SIGNATURE	30C. DATE	31B. UNITED STATES OF AMERICA BY	31C. AWARD DATE

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SF 1442 cover sheet

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Attachments

Attachment 1: Sample Bank Letter of Guarantee
Attachment 2: Breakdown of Price by Divisions of Specifications
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Attachment 4: Specifications
Attachment 5: Defense Base Act Insurance Information
Attachment 6 OBO NEC Specifications

REQUEST FOR QUOTATIONS - CONSTRUCTION

A. PRICE

The contractor shall complete all work, including furnishing all labor, material, equipment and services required under this purchase order for the following firm fixed price and within the time specified. This price shall include all labor, materials, overhead and profit.

Description	**Price – in USD**
Construction Project	
DBA Insurance	
TOTAL PRICE	

B. SCOPE OF WORK

The character and scope of the work are set forth in the contract. The Contractor shall furnish and install all materials required by this contract.

In case of differences between small and large-scale drawings, the latter will govern. Where a portion of the work is drawn in detail and the remainder of the work is indicated in outline, the parts drawn in detail shall apply also to all other portions of the work.

C. PACKAGING AND MARKING

Mark materials delivered to the site as follows:

American Embassy
Al Kindi Street
International Zone
Bagdad, Iraq

D. INSPECTION AND ACCEPTANCE

The COR, or his/her authorized representatives, will inspect from time to time the services being performed and the supplies furnished to determine whether work is being performed in a satisfactory manner, and that all supplies are of acceptable quality and standards.

The Contractor shall be responsible for any countermeasures or corrective action, within the scope of this contract, which may be required by the Contracting Officer as a result of such inspection.

D.1 *Substantial Completion*

(a) "*Substantial Completion*" means the stage in the progress of the work as determined and certified by the Contracting Officer in writing to the Contractor, on which the work (or a portion

designated by the Government) is sufficiently complete and satisfactory. Substantial completion means that the property may be occupied or used for the purpose for which it is intended, and only minor items such as touch-up, adjustments, and minor replacements or installations remain to be completed or corrected which:

(1) do not interfere with the intended occupancy or utilization of the work, and
(2) can be completed or corrected within the time period required for final completion.

(b) The "date of substantial completion" means the date determined by the Contracting Officer or authorized Government representative as of which substantial completion of the work has been achieved.

Use and Possession upon Substantial Completion - The Government shall have the right to take possession of and use the work upon substantial completion. Upon notice by the Contractor that the work is substantially complete (a Request for Substantial Completion) and an inspection by the Contracting Officer or an authorized Government representative (including any required tests), the Contracting Officer shall furnish the Contractor a Certificate of Substantial Completion. The certificate will be accompanied by a Schedule of Defects listing items of work remaining to be performed, completed or corrected before final completion and acceptance. Failure of the Contracting Officer to list any item of work shall not relieve the Contractor of responsibility for complying with the terms of the contract. The Government's possession or use upon substantial completion shall not be deemed an acceptance of any work under the contract.

D.2 *Final Completion and Acceptance*

D.2.1 "*Final completion and acceptance*" means the stage in the progress of the work as determined by the Contracting Officer and confirmed in writing to the Contractor, at which all work required under the contract has been completed in a satisfactory manner, subject to the discovery of defects after final completion, and except for items specifically excluded in the notice of final acceptance.

D.2.2 The "*date of final completion and acceptance*" means the date determined by the Contracting Officer when final completion of the work has been achieved, as indicated by written notice to the Contractor.

D.2.3 *Final Inspection and Tests* - The Contractor shall give the Contracting Officer at least five (5) days advance written notice of the date when the work will be fully completed and ready for final inspection and tests. Final inspection and tests will be started not later than the date specified in the notice unless the Contracting Officer determines that the work is not ready for final inspection and so informs the Contractor.

D.2.4 *Final Acceptance* - If the Contracting Officer is satisfied that the work under the contract is complete (with the exception of continuing obligations), the Contracting Officer shall issue to the Contractor a notice of final acceptance and make final payment upon:

- Satisfactory completion of all required tests,

- a final inspection that all items by the Contracting Officer listed in the Schedule of Defects have been completed or corrected and that the work is finally complete (subject to the discovery of defects after final completion), and
- submittal by the Contractor of all documents and other items required upon completion of the work, including a final request for payment (Request for Final Acceptance)

E - DELIVERIES OR PERFORMANCE

52.211-10 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984)

The Contractor shall be required to:

(a) commence work under this contract within **(5) five calendar days** after the date the Contractor receives the notice to proceed,
(b) prosecute the work diligently, and,
(c) complete the entire work ready for use not later than (**55) fifty five calendar days** after the date the Contractor receives the notice to proceed**.**

The time stated for completion shall include final cleanup of the premises and completion of punch list items.

52.211-12 LIQUIDATED DAMAGES - CONSTRUCTION (SEP 2000)

(a) If the Contractor fails to complete the work within the time specified in the contract, or any extension, the Contractor shall pay liquidated damages to the Government in the amount of **$732.00** for each calendar day of delay until the work is completed or accepted

(b) If the Government terminates the Contractor's right to proceed, liquidated damages will continue to accrue until the work is completed. These liquidated damages are in addition to excess costs of repurchase under the Default clause.

CONTRACTOR'S SUBMISSION OF CONSTRUCTION SCHEDULES

(a) The time for submission of the schedules referenced in FAR 52.236-15, "Schedules for Construction Contracts", paragraph (a), is hereby modified to reflect the due date for submission as "10 calendar days after receipt of an executed contract".

(b) These schedules shall include the time by which shop drawings, product data, samples and other submittals required by the contract will be submitted for approval.

(c) The Contractor shall revise such schedules (1) to account for the actual progress of the work, (2) to reflect approved adjustments in the performance schedule, and (3) as required by the Contracting Officer to achieve coordination with work by the Government and any separate contractors used by the Government. The Contractor shall

submit a schedule, which sequences work so as to minimize disruption at the job site.

(d) All deliverables shall be in the English language and any system of dimensions (English or metric) shown shall be consistent with that used in the contract. No extension of time shall be allowed due to delay by the Government in approving such deliverables if the Contractor has failed to act promptly and responsively in submitting its deliverables. The contractor shall identify each deliverable as required by the contract.

(e) Acceptance of Schedule: When the Government has accepted any time schedule; it shall be binding upon the Contractor. The completion date is fixed and may be extended only by a written contract modification signed by the Contracting Officer. Acceptance or approval of any schedule or revision thereof by the Government shall not:

(1) Extend the completion date or obligate the Government to do so,
(2) Constitute acceptance or approval of any delay, or
(3) Excuse the Contractor from or relieve the Contractor of its obligation to maintain the progress of the work and achieve final completion by the established completion date.

Notice Of Delay - If the Contractor receives a notice of any change in the work, or if any other conditions arise which are likely to cause or are actually causing delays which the Contractor believes may result in late completion of the project, the Contractor shall notify the Contracting Officer. The Contractor's notice shall state the effect, if any, of such change or other conditions upon the approved schedule, and shall state in what respects, if any, the relevant schedule or the completion date should be revised. The Contractor shall give such notice promptly, not more than ten (10) days after the first event giving rise to the delay or prospective delay. Only the Contracting Officer may make revisions to the approved time schedule.

Notice to Proceed

(a) After receiving and accepting any bonds or evidence of insurance, the Contracting Officer will provide the Contractor a Notice to Proceed. The Contractor must then prosecute the work, commencing and completing performance not later than the time period established in the contract.

(b) It is possible that the Contracting Officer may elect to issue the Notice to Proceed before receipt and acceptance of any bonds or evidence of insurance. Issuance of a Notice to Proceed by the Government before receipt of the required bonds or insurance certificates or policies shall not be a waiver of the requirement to furnish these documents.

Working Hours - All work shall be performed on regular workdays between 07:00 and 17:00. Other hours, if requested by the Contractor, may be approved by the Contracting Officer's Representative (COR). The Contractor shall give 24 hours in advance to COR who will consider any deviation from the hours identified above. Changes in work hours, initiated by the Contractor, will not be a cause for a price increase.

Preconstruction Conference

A preconstruction conference will be held no later than 5 days after contract award at to discuss the schedule, submittals, notice to proceed, mobilization and other important issues that affect construction progress. See FAR 52.236-26, Preconstruction Conference.

E.9 *Deliverables*

The following items shall be delivered under this contract:

Description	**Quantity**	**Delivery Date**	**Deliver To:**
Section E. Preconstruction Conference	1	5 days after award	COR
Section E. Construction Schedule	1	10 days after NTP	COR
Section G. Securities/Insurance	1	10 days after award	CO
Section F. Payment Request	1	Upon completion of work	COR
Section G. Personnel Biographies	1	5 days after award	COR
Section D. Request for Final Acceptance	1	Upon completion of work	COR
Section D. Request for Substantial Completion	1	5 days before inspection	COR
Section E. Notice of Delay	1	Within 10 days after event	CO
Section E. Additional Hours	1	No later than 24 hours in advance of need	COR
Section G. Differing Site Condition	1	Within 10 days of occurrence	CO
Punch List	1	5 days after Substantial Completion	COR
Section G. As-Built Drawings	1	Before final acceptance	COR

F ADMINISTRATIVE DATA

652.242-70 CONTRACTING OFFICER'S REPRESENTATIVE (COR) (AUG 1999)

(a) The Contracting Officer may designate in writing one or more Government employees, by name or position title, to take action for the Contracting Officer under this contract. Each designee shall be identified as a Contracting Officer's Representative (COR). Such designation(s) shall specify the scope and limitations of the authority so delegated; provided, that the designee shall not change the terms or conditions of the contract, unless the COR is a warranted Contracting Officer and this authority is delegated in the designation.

(b) The COR for this contract is the Facilities Manager.

Payment: The Contractor's attention is directed to Section H, 52.232-5, "Payments Under Fixed-Price Construction Contracts". The following elaborates on the information contained in that

clause.

Requests for payment may be made no more frequently than monthly. Payment requests shall cover the value of labor and materials completed and in place, including a prorated portion of overhead and profit.

After receipt of the Contractor's request for payment, and on the basis of an inspection of the work, the Contracting Officer shall make a determination as to the amount, which is then due. If the Contracting Officer does not approve payment of the full amount applied for, less the retainage allowed by in 52.232-5, the Contracting Officer shall advise the Contractor as to the reasons.

Under the authority of 52.232-27(a), the 14 day period identified in FAR 52.232-27(a)(1)(i)(A) is hereby changed to 30 days.

The Contractor shall address invoices to:

U.S Embassy Baghdad
Financial Management Officer
International Zone
Baghdad, Iraq

Alternately, invoices may be submitted in Acrobat PDF format only, to this email address:

BaghdadVouchers@state.gov

SYNCHRONIZED PREDEPLOYMENT AND OPERATIONAL TRACKER (SPOT)

In accordance with paragraph (g) of contract clause 52.225-19, Contractor Personnel in a Designated Operational Area or Supporting a Diplomatic or Consular Mission Outside the United States, the contractor shall use Synchronized Predeployment and Operational Tracker (SPOT). Contractor shall enter before deployment, or if already in the designated operational area, enter upon becoming an employee under the contract, and maintain current data, including departure data, for all Contractor personnel that are authorized to support a diplomatic or consular mission outside the United States. Information on how to register in SPOT is available at http://www.dod.mil/bta/products/spot.html

G. SPECIAL REQUIREMENTS

G.1.0 Performance/Payment Protection - The Contractor shall furnish some form of payment protection as described in 52.228-13 in the amount of 20% of the contract price. A Bank Guarantee letter is to be provided.

G.1.1 The Contractor shall provide the information required by the paragraph above within ten (10) calendar days after award. Failure to timely submit the required security may result in rescinding or termination of the contract by the Government. If the contract is terminated, the contractor will be liable for those costs as described in FAR 52.249-10,

Default (Fixed-Price Construction), which is included in this purchase order.

G.1.2 The bonds or alternate performance security shall guarantee the Contractor's execution and completion of the work within the contract time. This security shall also guarantee the correction of any defects after completion, the payment of all wages and other amounts payable by the Contractor under its subcontracts or for labor and materials, and the satisfaction or removal of any liens or encumbrances placed on the work.

G.1.3 The required securities shall remain in effect in the full amount required until final acceptance of the project by the Government. Upon final acceptance, the penal sum of the performance security shall be reduced to 10% of the contract price. The security shall remain in effect for one year after the date of final completion and acceptance, and the Contractor shall pay any premium required for the entire period of coverage.

G.2.0 Insurance - The Contractor is required by FAR 52.228-5, "Insurance - Work on a Government Installation" to provide whatever insurance is legally necessary. The Contractor shall at its own expense provide and maintain during the entire performance period the following insurance amounts:

G.2.1 General Liability (includes premises/operations, collapse hazard, products, completed operations, contractual, independent contractors, broad form property damage, personal injury)

1. **Bodily Injury on or off the site stated in US Dollars:**

   Per Occurrence $10,000.00
   Cumulative $60,000.00

2. **Property Damage on or off the site in US Dollars:**
   Per Occurrence $10,000.00
   Cumulative $60,000.00

G.2.2 The foregoing types and amounts of insurance are the minimums required. The Contractor shall obtain any other types of insurance required by local law or that are ordinarily or customarily obtained in the location of the work. The limit of such insurance shall be as provided by law or sufficient to meet normal and customary claims.

G.2.3 The Contractor agrees that the Government shall not be responsible for personal injuries or for damages to any property of the Contractor, its officers, agents, servants, and employees, or any other person, arising from an incident to the Contractor's performance of this contract. The Contractor shall hold harmless and indemnify the Government from any and all claims arising there from, except in the instance of gross negligence on the part of the Government.

G.2.4 The Contractor shall obtain adequate insurance for damage to, or theft of, materials and equipment in insurance coverage for loose transit to the site or in storage on or off the site.

G.2.5 The general liability policy required of the Contractor shall name "the United States of America, acting by and through the Department of State", as an additional insured with respect to operations performed under this contract.

G.3.0 Document Descriptions

G.3.1 Supplemental Documents: The Contracting Officer shall furnish from time to time such detailed drawings and other information as is considered necessary, in the opinion of the Contracting Officer, to interpret, clarify, supplement, or correct inconsistencies, errors or omissions in the Contract documents, or to describe minor changes in the work not involving an increase in the contract price or extension of the contract time. The Contractor shall comply with the requirements of the supplemental documents, and unless prompt objection is made by the Contractor within 20 days, their issuance shall not provide for any claim for an increase in the Contract price or an extension of contract time.

G.3.1.1 Record Documents. The Contractor shall maintain at the project site:

(1) a current marked set of Contract drawings and specifications indicating all interpretations and clarification, contract modifications, change orders, or any other departure from the contract requirements approved by the Contracting Officer; and,
(2) a complete set of record shop drawings, product data, samples and other submittals as approved by the Contracting Officer.

G.3.1.2 "As-Built" Documents: After final completion of the work, but before final acceptance thereof, the Contractor shall provide:

(1) a complete set of "as-built" drawings, based upon the record set of drawings, marked to show the details of construction as actually accomplished; and,
(2) record shop drawings and other submittals, in the number and form as required by the specifications.

G.4.0 Laws and Regulations - The Contractor shall, without additional expense to the Government, be responsible for complying with all laws, codes, ordinances, and regulations applicable to the performance of the work, including those of the host country, and with the lawful orders of any governmental authority having jurisdiction. Host country authorities may not enter the construction site without the permission of the Contracting Officer. Unless otherwise directed by the Contracting Officer, the Contractor shall comply with the more stringent of the requirements of such laws, regulations and orders and of the contract. In the event of a conflict between the contract and such laws, regulations and orders, the Contractor shall promptly advise the Contracting Officer of the conflict and of the Contractor's proposed course of action for

resolution by the Contracting Officer.

G.4.1 The Contractor shall comply with all local labor laws, regulations, customs and practices pertaining to labor, safety, and similar matters, to the extent that such compliance is not inconsistent with the requirements of this contract.

G.4.2 The Contractor shall give written assurance to the Contracting Officer that all subcontractors and others performing work on or for the project have obtained all requisite licenses and permits.

G.4.3 The Contractor shall submit proper documentation and evidence satisfactory to the Contracting Officer of compliance with this clause.

G.5.0 Construction Personnel - The Contractor shall maintain discipline at the site and at all times take all reasonable precautions to prevent any unlawful, riotous, or disorderly conduct by or among those employed at the site. The contractor shall ensure the preservation of peace and protection of persons and property in the neighborhood of the project against such action. The Contracting Officer may require, in writing that the Contractor removed from the work any employee that the Contracting Officer deems incompetent, careless, insubordinate or otherwise objectionable, or whose continued employment on the project is deemed by the Contracting Officer to be contrary to the Government's interests.

G.5.1 If the Contractor has knowledge that any actual or potential labor dispute is delaying or threatens to delay the timely performance of this contract, the Contractor shall immediately give notice, including all relevant information, to the Contracting Officer.

G.5.2 After award, the Contractor has **(5) five calendar days** to submit to the Contracting Officer a list of workers and supervisors assigned to this project for the Government to conduct all necessary security checks. It is anticipated that security checks will take approximately 30 days to perform. For each individual the list shall include:

(a) **Full Name**
(b) **Place and Date of Birth**
(c) **Current Address**
(d) **Identification number (*Jinsya or passort*)**
(e) **Vehicle make, model, color and license plate number**

Failure to provide any of the above information may be considered grounds for rejection and/or re submittal of the application. Once the Government has completed the security screening and approved the applicants a badge will be provided to the individual for access to the site. This badge may be revoked at any time due to the falsification of data, or misconduct on site.

G.5.3 The Contractor shall provide an English speaking supervisor on site at all times. This position is considered as key personnel under this purchase order.

G.6.0 Materials and Equipment - All materials and equipment incorporated into the work shall be new and for the purpose intended, unless otherwise specified. All workmanship shall be of good quality and performed in a skillful manner that will withstand inspection by the Contracting Officer.

G.7.0 Special Warranties

G.7.1 Any special warranties that may be required under the contract shall be subject to the stipulations set forth in 52.246-21, "Warranty of Construction", as long as they are not in conflict.

G.7.2 The Contractor shall obtain and furnish to the Government all information required to make any subcontractor's, manufacturer's, or supplier's guarantee or warranty legally binding and effective. The contractor shall submit both the information and the guarantee or warranty to the Government in sufficient time to permit the Government to meet any time limit specified in the guarantee or warranty, but not later than completion and acceptance of all work under this contract.

G.8.0 Equitable Adjustments

Any circumstance for which the contract provides an equitable adjustment that causes a change within the meaning of paragraph (a) of the "Changes" clause shall be treated as a change under that clause; provided, that the Contractor gives the Contracting Officer prompt written notice (within 20 days) stating:

(a) the date, circumstances, and applicable contract clause authorizing an equitable adjustment and

(b) that the Contractor regards the event as a changed condition for which an equitable adjustment is allowed under the contract

The Contractor shall provide written notice of a differing site condition within 10 calendar days of occurrence following FAR 52.236-2, Differing Site Conditions.

G.9.0 Zoning Approvals and Permits

The Government shall be responsible for:

- obtaining proper zoning or other land use control approval for the project
- obtaining the approval of the Contracting Drawings and Specifications
- paying fees due for the foregoing; and,
- for obtaining and paying for the initial building permits.

H. CLAUSES

52.252-2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

http://acquisition.gov/far/index.html or, http://farsite.hill.af.mil/search.htm

These addresses are subject to change. If the Federal Acquisition Regulation (FAR) is not available at the locations indicated above, use the Dept. of State Acquisition Website at http://www.statebuy.state.gov to see the links to the FAR. You may also use an Internet "search engine" (e.g., Yahoo, Excite, Alta Vista, etc.) to obtain the latest location of the most current FAR.

FEDERAL ACQUISITION REGULATION (48 CFR CH. 1)

Clause	Title and Date
52.204-9	PERSONAL IDENTIFICATION VERIFICATION OF CONTRACTOR PERSONNEL (JAN 2011)
52.204-10	Reporting Executive Compensation and First-Tier Subcontract Awards (JUL 2010)
52.209-6	Protecting the Government's Interest When Subcontracting with Contractors Debarred, Suspended, or Proposed for Debarment (DEC 2010)
52.213-4	Terms and Conditions-Simplified Acquisitions (Other than Commercial Items) (AUG 2011)
52.222-1	Notice to the Government of Labor Disputes (FEB 1997)
52.222-19	Child Labor – Cooperation with Authorities and Remedies (AUG 2010)
52.222-50	COMBATING TRAFFICKING IN PERSONS (FEB 2009)
52.223-18	Encouraging Contractor Policies to Ban Text Messaging While Driving (AUG 2011)
52.225-10	Notice of Buy American Act/Balance of Payments Program—Construction Materials (FEB 2000)
52.225-13	Restrictions on Certain Foreign Purchases (JUN 2008)
52.225-14	Inconsistency Between English Version and Translation of Contract (AUG 1989)
52.225-19	Contractor Personnel in a Designed Operational Area or Supporting a Diplomatic Mission Outside the United States (MAR 2008)
52.228-3	Workers' Compensation Insurance (Defense Base Act) (Apr 1984)
52.228-4	Workers' Compensation and War-Hazard Insurance Overseas (APR 1984)
52.228-5	Insurance - Work on a Government Installation (JAN 1997)
52.228-11	Pledges of Assets (SEP 2009)
52.228-13	Alternative Payment Protection (JUL 2000)

52.229-6	Taxes - Foreign Fixed-Price Contracts (JUN 2003)
52.232-5	Payments under Fixed-Price Construction Contracts (SEP 2002)
52.232-8	Discounts for Prompt Payment (FEB 2002)
52.232-11	Extras (APR 1984)
52.232-18	Availability of Funds (APR 1984)
52.232-24	Prohibition of Assignment of Claims (JAN 1986)
52.232-27	Prompt Payment for Construction Contracts (OCT 2008)
52.232-34	Payment by Electronic Funds Transfer – Other than Central Contractor Registration (MAY 1999)
52.233-1	Disputes (JUL 2002) Alternate I (DEC 1991)
52.233-3	Protest after Award (AUG 1996)
52.236-2	Differing Site Conditions (APR 1984)
52.236-3	Site Investigation and Conditions Affecting the Work (APR 1984)
52.236-5	Material and Workmanship (APR 1984)
52.236-6	Superintendence by the Contractor (APR 1984)
52.236-7	Permits and Responsibilities (NOV 1991)
52.236-8	Other Contracts (APR 1984)
52.236-9	Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements (APR 1984)
52.236-10	Operations and Storage Areas (APR 1984)
52.236-11	Use and Possession Prior to Completion (APR 1984)
52.236-12	Cleaning Up (APR 1984)
52.236-14	Availability and Use of Utility Services (APR 1984)
52.236-15	Schedules for Construction Contracts (APR 1984)
52.236-21	Specifications and Drawings for Construction (FEB 1997)
52.236-26	Preconstruction Conference (FEB 1995)
52.242-14	Suspension Of Work (APR 1984)
52.243-4	Changes (JUNE 2007)
52.243-5	Changes and Changed Conditions (APR 1984)
52.244-6	Subcontracts for Commercial Items (DEC 2010)
52.245-9	Use & Charges (AUG 2010)
52.246-12	Inspection of Construction (AUG 1996)
52.246-21	Warranty of Construction (APR 1984)
52.249-2	Termination for Convenience of the Government (Fixed-Price) (MAY 2004) Alternate I (APR 1984)
52.249-14	Excusable Delay (APR 1984)
52.249-10	Default (Fixed-Price Construction) (APR 1984)

The following clauses are set forth in full text:

DEPARTMENT OF STATE ACQUISITION REGULATION (DOSAR) CLAUSES

652.204-70 DEPARTMENT OF STATE PERSONAL IDENTIFICATION CARD ISSUANCE PROCEDURES (MAY 2011)

(a) The Contractor shall comply with the Department of State (DOS) Personal Identification Card Issuance Procedures for all employees performing under this contract who require frequent and continuing access to DOS facilities, or information systems. The Contractor shall insert this clause in all subcontracts when the subcontractor's employees will require frequent and continuing access to DOS facilities, or information systems.

(b) The DOS Personal Identification Card Issuance Procedures may be accessed at *http://www.state.gov/m/ds/rls/rpt/c21664.htm* .

(End of clause)

CONTRACTOR IDENTIFICATION (JULY 2008)

Contract performance may require contractor personnel to attend meetings with government personnel and the public, work within government offices, and/or utilize government email.

Contractor personnel must take the following actions to identify themselves as non-federal employees:

1) Use an email signature block that shows name, the office being supported and company affiliation (e.g. "John Smith, Office of Human Resources, ACME Corporation Support Contractor");

2) Clearly identify themselves and their contractor affiliation in meetings;

3) Identify their contractor affiliation in Departmental e-mail and phone listings whenever contractor personnel are included in those listings; and

4) Contractor personnel may not utilize Department of State logos or indicia on business cards.

(End of clause)

DOSAR 652.236-70 ACCIDENT PREVENTION (APR 2004)

(a) *General*. The contractor shall provide and maintain work environments and procedures which will safeguard the public and Government personnel, property, materials, supplies, and equipment exposed to contractor operations and activities; avoid interruptions of Government operations and delays in project completion dates; and, control costs in the performance of this contract. For these purposes, the contractor shall:

(1) Provide appropriate safety barricades, signs and signal lights;

(2) Comply with the standards issued by any local government authority having jurisdiction over occupational health and safety issues; and,

(3) Ensure that any additional measures the contracting officer determines to be reasonably necessary for this purpose are taken.

(4) For overseas construction projects, the contracting officer shall specify in writing additional requirements regarding safety if the work involves:

(i) Scaffolding;

(ii) Work at heights above two (2) meters;

(iii) Trenching or other excavation greater than one (1) meter in depth;

(iv) Earth moving equipment;

(v) Temporary wiring, use of portable electric tools, or other recognized electrical hazards. Temporary wiring and portable electric tools require the use of a ground fault circuit interrupter (GFCI) in the affected circuits; other electrical hazards may also require the use of a GFCI;

(vi) Work in confined spaces (limited exits, potential for oxygen less that 19.5 percent or combustible atmosphere, potential for solid or liquid engulfment, or other hazards considered to be immediately dangerous to life or health such as water tanks, transformer vaults, sewers, cisterns, etc.);

(vii) Hazardous materials – a material with a physical or health hazard including but not limited to, flammable, explosive, corrosive, toxic, reactive or unstable, or any operations which creates any kind of contamination inside an occupied building such as dust from demolition activities, paints, solvents, etc.; or

(viii) Hazardous noise levels.

(b) *Records*. The contractor shall maintain an accurate record of exposure data on all accidents incident to work performed under this contract resulting in death, traumatic injury, occupational disease, or damage to or theft of property, materials, supplies, or equipment. The contractor shall report this data in the manner prescribed by the contracting officer.

(c) *Subcontracts*. The contractor shall be responsible for its subcontractors' compliance with this clause.

(d) *Written program.* Before commencing work, the contractor shall:

(1) Submit a written plan to the contracting officer for implementing this clause. The plan shall include specific management or technical procedures for effectively controlling hazards associated with the project; and,

(2) Meet with the contracting officer to discuss and develop a mutual understanding relative to administration of the overall safety program.

(e) *Notification*. The contracting officer shall notify the contractor of any non-compliance with these requirements and the corrective actions required. This notice, when delivered to the contractor or the contractor's representative on site, shall be deemed sufficient notice of the non-compliance and corrective action required. After receiving the notice, the contractor shall immediately take corrective action. If the contractor fails or refuses to promptly take corrective action, the contracting officer may issue an order suspending all or part of the work until satisfactory corrective action has been taken. The contractor shall not be entitled to any equitable adjustment of the contract price or extension of the performance schedule on any suspension of work order issued under this clause.
(End of clause)

652.242-73 AUTHORIZATION AND PERFORMANCE (AUG 1999)

(a) The contractor warrants the following:

(1) That is has obtained authorization to operate and do business in the country or countries in which this contract will be performed;
(2) That is has obtained all necessary licenses and permits required to perform this contract; and,
(3) That it shall comply fully with all laws, decrees, labor standards, and regulations of said country or countries during the performance of this contract.

(b) If the party actually performing the work will be a subcontractor or joint venture partner, then such subcontractor or joint venture partner agrees to the requirements of paragraph (a) of this clause.

652.243-70 NOTICES (AUG 1999)

Any notice or request relating to this contract given by either party to the other shall be in writing. Said notice or request shall be mailed or delivered by hand to the other party at the address provided in the schedule of the contract. All modifications to the contract must be made in writing by the contracting officer.

652.229-71 PERSONAL PROPERTY DISPOSITION AT POSTS ABROAD (AUG 1999)

Regulations at 22 CFR Part 136 require that U.S. Government employees and their families do not profit personally from sales or other transactions with persons who are not themselves

entitled to exemption from import restrictions, duties, or taxes. Should the contractor experience importation or tax privileges in a foreign country because of its contractual relationship to the United States Government, the contractor shall observe the requirements of 22 CFR Part 136 and all policies, rules, and procedures issued by the chief of mission in that foreign country.

652.228-71 WORKER'S COMPENSATION INSURANCE (DEFENSE BASE ACT) - SERVICES (JUN 2006)

(a) This clause supplements FAR 52.228-3. For the purposes of this clause, "covered contractor employees" includes the following individuals:

(1) United States citizens or residents;

(2) Individuals hired in the United States or its possessions, regardless of citizenship; and

(3) Local nationals and third country nationals where contract performance takes place in a country where there are no local workers compensation laws.

(b) The Contractor shall procure Defense Base Act (DBA) insurance pursuant to the terms of the contract between the Department of State and the Department's DBA insurance carrier for covered contractor employees, unless the Contractor has a DBA self-insurance program approved by the Department of Labor. The Contractor shall submit a copy of the Department of Labor's approval to the contracting officer upon contract award, if applicable.

(c) The current rate under the Department of State contract is $5.50 of compensation for construction.

(d) The Contractor shall insert a clause substantially the same as this in all subcontracts. The Contractor shall require that subcontractors insert a similar clause in any of their subcontracts.

(e) Should the rates for DBA insurance coverage increase or decrease during the performance of this contract, the contracting officer shall modify this contract accordingly.

(f) The Contractor shall demonstrate to the satisfaction of the contracting officer that the equitable adjustment as a result of the insurance increase or decrease does not include any reserve for such insurance. Adjustment shall not include any overhead, profit, general and administrative expenses, etc.

(g)(1) Section 16 of the State Basic Authorities Act (22 U.S.C. 2680a), as amended, provides that the Defense Base Act shall not apply with respect to such contracts as the Secretary of State determines are contracts with persons employed to perform work for the Department of State on an intermittent basis for not more than 90 days in a calendar year. "Persons" includes individuals hired by companies under contract with the Department. The Procurement Executive has the authority to issue the waivers for Contractor employees who work on an intermittent or short-term basis.

(2) The Contractor shall submit waiver requests to the contracting officer. The request shall contain the following information:

(i) Contract number;

(ii) Name of Contractor;

(iii) Brief description of the services to be provided under the contract and country of performance;

(iv) Name and position title of individual(s);

(v) Nationality of individual(s) (must be U.S. citizen or U.S. resident);

(vi) Dates (or timeframe) of performance at the overseas location; and,

(vii) Evidence of alternative worker's compensation coverage for these employees (e.g., evidence that the State worker's compensation program covers workers on short-term foreign assignments).

(3) The contracting officer shall provide to the Contractor the original of the approved or disapproved document and maintain a copy in the contract file.

(End of clause)

I. LIST OF ATTACHMENTS

ATTACHMENT NO.	DESCRIPTION OF ATTACHMENT	NO.PAGES
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Attachment 2	Breakdown of Price by Divisions of Specifications	1
Attachment 3	Drawings	9
Attachment 4	Specifications	11
Attachment 5	Defense Base Act Insurance Information	1
Attachment 6	OBO NEC Specifications	97

ATTACHMENT #1
SAMPLE LETTER OF BANK GUARANTY

Place ***[ ]***
Date ***[ ]***

Contracting Officer
U.S. Embassy, Baghdad, Iraq

Letter of Guaranty No**. _____**

SUBJECT: Performance and Guaranty

The Undersigned, acting as the duly authorized representative of the bank, declares that the bank hereby guarantees to make payment to the Contracting Officer by check made payable to the Treasurer of the United States, immediately upon notice, after receipt of a simple written request from the Contracting Officer, immediately and entirely without any need for the Contracting Officer to protest or take any legal action or obtain the prior consent of the Contractor to show any other proof, action, or decision by another authority, up to the sum of [Amount equal to 20% of the contract price in U.S. dollars during the period ending with the date of final acceptance and 10% of the contract price during contract guaranty period], which represents the deposit required of the contractor to guarantee fulfillment of his obligations for the satisfactory, complete, and timely performance of the said contract ***[contract number]*** for ***[description of work]*** at ***[location of work]*** in strict compliance with the terms, conditions and specifications of said contract, entered into between the Government and ***[name of contractor]*** of ***[address of contractor]*** on ***[contract date]***, plus legal charges of 10% per annum on the amount called due, calculated on the sixth day following receipt of the Contracting Officer's written request until the date of payment.

The undersigned agrees and consents that said contract may be modified by Change Order or Supplemental Agreement affecting the validity of the guaranty provided, however, that the amount of this guaranty shall remain unchanged.

The undersigned agrees and consents that the Contracting Officer may make repeated partial demands on the guaranty up to the total amount of this guaranty, and the bank will promptly honor each individual demand.

This letter of guaranty shall remain in effect until 3 months after completion of the guaranty period of Contract requirement.

_____-

Depository Institution: ***[Name]***
Address: Location: _____
Representative(s): _____ _____ State of Inc.: _____
_____ _____ Corporate Seal:
_____ _____

Certificate of Authority is attached evidencing authority of the signer to bind the bank to this document.

ATTACHMENT #2

UNITED STATES DEPARTMENT OF STATE
BREAKDOWN OF PRICE BY DIVISIONS OF SPECIFICATIONS

(1)DIVISION/DESCRIPTION (2)LABOR (3)MATERIALS (4)OVERHEAD (5)PROFIT (6)TOTAL

1 General Requirements
2. Site Work

3. Concrete
4. Masonry

5. Metals
6. Wood and Plastic

7. Thermal and Moisture
8. Doors and Windows

9. Finishes
10. Specialties

11. Equipment
12 Furnishings

13. Special Construction
14. Conveying Systems

15. Mechanical
16. Electrical

TOTAL:

[Note to Contracting Officer: identify currency]
Allowance Items:

PROPOSAL PRICE TOTAL:

[Note to Contracting Officer: identify currency]

Alternates (list separately do not total)

Offeror: ***Date***

PRICE BREAKDOWN BY DIVISION OF SPECIFICATION ITEMS

ATTACHMENT #3
Drawings

1. S1
2. S2
3. S3
4. S4
5. S5
6. S6
7. S7
8. S8
9. S9

[Will be provided at site visit]

ATTACHMENT #4
STATEMENT of WORK

CONTRACT DOCUMENTS
For

2012 Rec Center Metal Stairwell

U.S. EMBASSY BAGHDAD, IRAQ

3 March 2012

Statement of Work

Specification Sections

01521	Construction Safety and Occupational Health
02833	Ornamental Metal Security Fences
02843	Perimeter Gate Facilities
03300	Cast in Place Concrete
05511	Metal Stairs
09912	Painting

Drawings

S1	Stairwell Details
S2	Stairwell Details
S3	Stairwell Details
S4	Stairwell Details
S5	Stairwell Details
S6	Stairwell Details
S7	Stairwell Details
S8	Stairwell Details
S9	Stairwell Details

STATEMENT of WORK

GENERAL CONSTRUCTION SERVICES

2012 Rec Center Metal Stairwell

U.S. EMBASSY BAGHDAD, IRAQ

U.S. EMBASSY
BAGHDAD, IRAQ

3 March 2012

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Deliverables ……. 11

Project Schedule ……...… 12

Responsibilities & Project Management …… 13

Attachments:

Specification Sections

01521 Construction Safety and Occupational Health
02833 Ornamental Metal Security Fences
02843 Perimeter Gate Facilities
03300 Cast in Place Concrete
05511 Metal Stairs
09912 Painting

Drawings

S1 Stairwell Details
S2 Stairwell Details
S3 Stairwell Details
S4 Stairwell Details
S5 Stairwell Details
S6 Stairwell Details
S7 Stairwell Details
S8 Stairwell Details
S9 Stairwell Details

1. Project Description

1.1 Project Synopsis

A. The project will provide one exterior stairwell at the Recreation Center building to improve the roof access.

1.2 BACKGROUND

A. The existing roof access door/hatch at the Recreation Center is difficult and dangerous for climbers to open while balancing on the ladder. Also, the safety cage for the ladders inside going up two stories to the roof does not follow any safety specifications or a benefit for climbers.

1.3 SOLUTION

A. Provide exterior stair case to enable for easier and safer access to the roof. The stair case would make it easier to carry working tools and repair materials when servicing roof equipment.

2. GENERAL CONDITIONS

2.1 **Fixed-Price Proposal**. The Contractor shall provide one fixed-priced Proposal for the complete Project that includes every aspect of the Work.

2.2 **Specifications**.

A. The Work shall be governed by the United States Department of State Overseas Buildings Operations New Embassy Compound, Baghdad, Iraq Master Specifications, International Codes, which include the International Building Code, International Mechanical Code, International Plumbing Code, and National Electric Code, also are applicable. Should there be a discrepancy between the NEC Specifications and the applicable Building Code, the more stringent of the two shall govern.

B. The Contractor is responsible for compliance with all Building Codes; Work not in compliance with the Codes shall be deemed to be unacceptable.

2.3 **Execution**. The Work shall be executed in a diligent and workmanlike manner in accordance with the negotiated fixed-price, this Scope of Work, the Project Schedule, referenced Building Codes, and the laws of the City of Baghdad where applicable.

2.4 **Work Hours**. Unless otherwise agreed with Facilities Management, the Work shall be executed during normal Embassy work hours. Night, weekend or holiday work shall not be permitted except as arranged in advance with Facilities Management. Embassy holiday schedule is available from Facilities Management.

2.5 **Safety**.

A. The Contractor shall be responsible for conducting the work in a manner that ensures the safety of residents, employees and visitors to the Embassy, and the Contractor's employees.

B. The Contractor is required to comply with the Construction Safety and Occupational Health Regulations of OBO Specification Section 01521 and the US Army Corps of Engineers Safety and Health requirements Manual. (EM385).

2.6 **Workforce**.

A. The contractor shall provide all supervision, skilled and unskilled labor needed to perform the work. The Contractor shall provide all skilled and unskilled labor needed to perform the Work.

B. In order to comply with the Embassy's minimum escort ratio requirement of one (1) escort to four (4) workers, the Contractor will have on his staff an employee(s) with an RSO vetted "Escort" Badge.

C. If the Contractor has no staff with an Escort Badge the Contractor will have 10 days from award to submit the required paperwork. The RSO vetting process could take up to 30 days and must be shown on the Contractors Project Schedule.

D. Information for all non-badged staff must be submitted to the COR for processing to allow the workers access to the NEC. This list must be resubmitted every 30 days or when modified.

E. If escorts are needed prior to being vetted by the RSO the Contractor may submit a request to the COR for government furnished escorts. The COR will schedule temporary escorts ONLY if they are available and the request must be submitted at least 48 hours in advance of the preferred date.

2.7 **Subcontractors**. Contractor shall be responsible for the conduct and workmanship of Subcontractors engaged in the Project, and for Subcontractors compliance with the terms of this Statement of Work. The Contractor is responsible for the behavior and workmanship of Subcontractors while on Embassy property.

2.8 **Modification to Contract**. The Contractor shall not incur any costs beyond those described in this SOW unless directed otherwise in writing by the Contracting Officer. Any work performed by the Contractor beyond this SOW without written direction from the Contracting Officer will be at the Contractor's own risk and at no cost to the Embassy.

2.9 **Stop Work**. At any time during the Project, the Contracting Officer reserves the right to Stop Work for protection of employees or visitors, security, or any other reason at his/her discretion.

2.10 **Construction Cost Breakdown**. The Government provided "Construction Cost Breakdown" is for bid comparison only, and the contractor is responsible to field measure and to quantify the required materials and tasks as to complete the job.

2.11 **Submittals**. The contractor is responsible to submit shop drawings prior to fabrication and release of any materials for the FAC Engineer's review and

approval. The Engineer's review, however, does not relieve of the contractor's responsibility for the engineering work as to provide a complete working system.

2.12 **Excavation and Utilities**. The contractor is responsible to locate all existing utility lines prior to any excavation. Prior to disconnecting any existing utility services, the contractor is responsible to provide 48-hour advance notice to the COR.

2.13 **Close-out**. Prior to final acceptance, the contractor is to submit to the Engineer marked up drawings (As-Builts) reflecting the work as constructed. The drawings shall be digitally submitted on a CD-ROM in both AutoCAD and PDF format.

2.14 **Housekeeping**. The contractor is responsible to clean up daily after working hours. The Contractor is also responsible for Final Cleaning of the area, ready for use by the Government.

3. BID FORM - CONSTRUCTION COST BREAKDOWN

Rec Center Metal Stairwell - Feb 2012

No	Descriptions	Unit	Qty	Unit Price $	Total Price $
1	**Administration**				
A	Mobilization/Demobilization				
B	Submittals and shop drawings				
C	Cleanup, Disposal				
	Administration			**Sub-Total**	
2	**New Work**				
A	Security fence with concrete footing	LS			
B	Stairwell	LS			
C	Painting	LS			
	New Work			**Sub-Total**	
3	**DBA Insurance**				
A	Contractor shall cover each of its workers at the site with DBA Workers' Compensation coverage, and require its subcontractors to do the same. Contractor must furnish certificate evidencing this coverage to Engineer prior to starting work.	%			
	DBA Insurance			**Sub-Total**	
	Items 1 thru 3			**Sub-Total**	
	General & Admin Markup: %				
				Sub-Total	
	Profit: %				
				Contract Cost	

4. SCOPE OF WORK

4.1 General Requirements

A. The Contractor is to provide all labor, logistics, equipment and material for the Work requested based on the attached and referenced drawings and specifications, and the specific instructions noted in this Statement of Work.
B. Contract requires Steel Fabrication Shop Drawings per NISD standards www.nisd.org. Shop Drawings to be submitted for FAC approval prior to any fabrication.
C. Comments below supplement the referenced specifications and are to be incorporated into the Work. If there are any conflicts, the most stringent standard applies.
D. Except as noted, within 5 days of Notice to Proceed, the contractor shall provide to the COR a project schedule showing start to completion.
E. Except as noted, within 10 days of NTP, the Contractor shall provide to the COR details of the proposed installation utilizing written description or sketches or both.
F. The contractor is responsible to dispose of the construction debris outside of the IZ. Include, but not limited to soils, rock excavation, packing materials, scrap steel, and debris generated by project.
G. The contractor is responsible to properly layout and prepare for the installation based on locations provided by FAC.
H. Concrete surfacing in the area is assumed adequate to sustain the base plate anchor bolts but must be verified in the field by the Contractor.
I. When pursuing the work, the contractor is to take extra care as not to damage existing structure.

4.2 Stairwell Installation

A. Prior to any fabrication or construction, submit Steel Fabrication Shop Drawings per NISD standards (www.nisd.org). Shop Drawings are to be approved by FAC prior to any fabrication.
B. Provide metal security fence, gate and concrete foundation as per attached details. The Contractor shall provide a proposed layout of the stairwell location to minimize the underground utility disturbance.
C. For concrete landing pad, excavate 350mm deep over the area in which the new pad is to be located. Existing gravel, pavers, concrete curbs and pavement are to be removed as a part of this excavation. When removing the existing concrete structure, provide saw cutting machine.
D. Provide a Sub-base course 150 mm compacted thickness in a single layer, compacted by hand-operated tampers. Compact sub-base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698.
   Sub-base Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.

E. Provide form work as to properly layout and prepare for the concrete pour.
F. All concrete pad edges are to receive chamfered finishing.
G. All concrete is to be from a nearby IZ batch plant. No hand mix concrete will be accepted.
H. Concrete is to be poured monolithically. Therefore, no expansion joints are to be installed. However, the control joints are to be installed in every 2.5 m x 2 m grid with 13 mm joint wide.
I. Provide curing of concrete pad with wet burlaps for minimum of seven (7) days.
J. The concrete is to receive smooth float finish.
K. Furnish and install metal pan steel staircase with a metal platform at the head of each stair (see attached concept drawings).
L. The stair construction is to include stringers, headers, treads, risers, railings, clips, hangers, struts, braces and other supports and related members necessary to complete the installation. Wherever practicable concealed supporting members, braces etc. are to be used.
M. All structural steel members are to be connected by steel bolts. Welding shall not be used in lieu of steel bolt connection. The bolts shall meet SAE-6r.5 standard.
N. Provide metal pan type stairs as to safely support a minimum live load of 100 psf and dead load of 60 psf for tread and platform surfaces.
O. Provide necessary concrete footing at the stair landing. Include, but not limited to, structural calculation for the footing requirement, form work with chamfered edges, 95% modified proctor compaction on sub-base and sub-grade prior to concrete placement of the footing.
P. Each stair is to have minimum 36” wide clearance, a platform at each level and 42” high handrails on each side of the stairwell.
Q. The contractor is responsible to provide mid rail on each handrails to meet OHSA standards.
R. Railing members are to be made with 32mm steel pipe with intermediate posts welded to railings.
S. The stairs are to include metal risers and treads.
T. The treads is to have diamond plate finish.
U. All structural members are to be made of ASTM A36 steel.
V. The contractor is responsible to use continuous welding. No tack welding will be accepted for this project. Make joints true and tight, and make connections between parts light-proof and tight. Provide continuous welds, ground smooth where exposed.
W. The height of the stairs at each location shall be adjusted to meet the building parapet height.
X. Provide safety reflection tapes to meet the safety standards.
Y. All field welds are to be wire brushed, primed and painted.
Z. All areas of exposed metal are to have one coat primer and two coats final paint.
AA. Provide an additional top coat of paint following welding operation to provide a clean finished product.

BB. Beams and columns are to be cleaned prior to acceptance.
CC. Contractor to provide 5 gallons (20 liters) of paint as attic stock upon completion.

4.3 **Closeout**

A. At completion of work, the Contractor shall clean any impacted areas to a condition equal to original condition.
B. All shipping materials and construction debris are to be disposed of in a legal manner outside of the IZ.
C. Prior to Final Acceptance the Contractor shall submit to the Contracting Officer Representative marked up drawings (As-Builts) reflecting the work as constructed. The drawings shall be digitally submitted on a CD-ROM in both AutoCAD and PDF format.

5. DELIVERABLES – See Section E.9

6. PROJECT SCHEDULE

Commencement, Prosecution, and Completion of Work – See Section E

7. RESPONSIBILITIES AND PROJECT MANAGEMENT

7.1 **COR**. A Contracting Officers Representative (COR) will be assigned to ensure quality assurance goals are met. The Contractor shall provide the COR access to the site at all times.

7.2 **Point of Contact** (POC). The COR shall be the main point of contact for this Project. The Contractor shall report to the COR on (a) status of the Project, (b) changes in Schedule, (c) accidents and safety issues, (d) disruptions to elevator or utility services; and all other important information pertaining to the Project

7.3 **English Speaking Representative**. The Contractor shall provide an English-speaking representative on-site during all working hours with the authority to make all decisions on behalf of the Contractor and subcontractors.

7.4 **Management Personnel**. The Contractor shall staff the site, full-time, with a competent senior manager who shall perform project management. Remote project management is not an option. This individual shall keep a detailed photographic and written history of the project and shall update the Government weekly.

7.5 **Site Security**. The Contractor is responsible for on-site security as necessary to ensure no unauthorized access to their work sites. The Contractor is 100% responsible for securing their working materials and equipment. Any damage to facilities or infrastructure, which happens due to a lack of security, will be the responsibility of the Contractor to correct.

7.6 **Contractor's Temporary Work Center**. The Contractor will be permitted to use a designated area within the contract limits for operation of his construction equipment and office if warranted. If directed by the Contracting Officer, the Contractor shall not receive additional compensation to relocate his operations. The Contractor is responsible for obtaining any required additional mobilization area above that designated. On completion of the contract, all facilities shall be removed from the mobilization area within 5 days of final acceptance by the Contractor and shall be disposed of in accordance with applicable host government laws and regulations. The site shall be cleared of construction debris and other materials and the area restored to its final grade. The Contractor is responsible for maintaining this area in a clear orderly manner.

7.7 **Health and Safety.**

A. The Contractor shall be solely responsible for risk assessments, managing health, and safety issues associated with this project. The Contractor must provide cold water to all workers at the job sites. Based on hazard assessments, Contractors shall provide or afford each affected employee personal protective equipment (PPE) that will protect the employee from hazards. At a minimum PPE shall consist of eye protection, hard hats, and closed toe shoes.

B. If the workers arrive on-site with sandals or athletic shoes, the Contractor is expected to provide rubber boots to them or send them home. All construction workers and management personnel must wear hard hats at all times on the construction sites. Contractor provided rubber boots and rubber gloves shall be worn when working around concrete placement. Other PPE such as gloves, dust masks, air respirators (sewage work) are also recommended. These items must be provided at the Contractor's expense. Workers may use discretion if they feel unsafe in using the equipment in a hostile environment. Any worker at an elevated location above 4 meters, with the exception of a portable ladder, must be provided and utilize a safety harness.

C. The Contractor must adhere to the Construction Safety and Occupational Health Regulations of OBO Specification Section 01521.

7.8 **Confined Spaces**.

A. Work conducted in confined spaces must have a written permit issued by the POSHO. Confined space is any area limited in dimension or ventilation with restricted means of entry or exit. Identify with the COR any spaces which may be subject to permit.

B. Permit-required confined spaces include sewers, electrical vaults, utility tunnels, sump pits, mechanical rooms, tanks, pits, excavations deeper than 1200 mm, as well as other types of enclosures. Any space that is accessed by lifting a manhole cover is a permit-required confined space. COR will provide forms for the permit. Contractor is responsible to identify activity in confined space and to apply for the POSHO permit prior to initiating work.

ATTACHMENT 5:
DEFENSE BASE INSURANCE INFORMATION

Contract number: S-AQMMA-08-C-0204

Contractor: Continental Insurance Co.
333 S. Wabash Ave
Chicago, IL 60604-4107

Agent: Rutherfoord International
5500 Cherokee Avenue, Suite 300
Alexandria, VA 22312

Primary Contact: Delia Shontere, Phone (703) 813-6507
FAX: (703) 354-0370, Email: delia.shontere@rutherfoord.com

Secondary Contact Sara Payne, Phone (703) 813-6503, same FAX as above
E-mail: sara.payne@rutherfoord.com

Rates July 22, 2011 through July 21, 2012:
Please note the rates referenced below are subject change due to an ongoing contract audit. If the audit outcome determines different rates are applicable, A/OPE will issue an additional PIB with the rates and guidance.

Description	Rate
Services	$4.00 per $100 of employee compensation
Construction	$5.50 per $100 of employee compensation
Security Contractor/Guards without Aviation Exposure within Global War on Terrorism designated areas (currently designated areas are Iraq and Afghanistan)	$10.50 per $100 of employee compensation
Aviation Related Services with Aviation Exposure within Global War on Terrorism designated areas (currently designated areas are Iraq and Afghanistan)	$20.00 per $100 of employee compensation

ATTACHMENT # 6

OBO NEC Specifications
01521 Construction Safety and Occupational Health
02833 Ornamental Metal Security Fences
02843 Perimeter Gate Facilities
03300 Cast in Place Concrete
05511 Metal Stairs
09912 Painting

SECTION 01521 – CONSTRUCTION SAFETY AND OCCUPATIONAL HEALTH

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Other general provisions of the Contract, including FAR clauses by reference or as amended in Contract Sections B through J, and other Division 1 sections of these Contract Specifications apply to requirements of this Section; this Section in turn applies to the Contract Drawings and to Specification Divisions 2 through 16 to be developed by the Contractor.

B. Refer to Section 01501, *Temporary Facilities and Controls*, for information on materials, equipment, and electrical power related to temporary facilities.

C. Regulations and Standards. Governing regulations and specific technical safety and health requirements for work performed at Project Site and incorporated into this construction safety and occupational health program include the following:

1. Latest edition of U.S. Army Corps of Engineers (USACE) Safety and Health Requirements Manual, EM 385-1-1; this document is available at U.S. Government Printing Office, Washington D.C.
2. DOS Foreign Affairs Manual (FAM), Vol. 6, Subchapter 610 "Safety Health and Environmental Management Program" shall apply when and where construction activity impacts on U.S. diplomatic missions and the public.
3. NFPA Code 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations.
4. ANSI A10 series standards for Safety Requirements for Construction and Demolition.
5. NFPA Code 51B, Standard for Fire Prevention During Welding, Cutting, and Other Hot Work.
6. NFPA 10, Standard for Portable Fire Extinguishers.
7. Rigging, by James Headley, Crane Institute of America Publishing Company, Mainland Florida, 2001.
8. 2001 Food Code, Food and Drug Administration, National Technical Information Service Publication PD2002-100819, or latest edition.

1.2 SUMMARY

A. The purpose of this Section is to indicate the nature and scope of Contractor responsibilities for:

1. Construction safety and occupational health for all persons and property at the Project Site.
2. Developing a Construction Accident Prevention Plan (CAPP) for management procedures, operations, training, inspections, assessments and reporting of safety and health matters on site.

1.3 DEFINITIONS

Refer to Contract Glossary for definitions of all safety-related terms, and specifically, Designated Authority, Hazard, Activity Hazard Analysis, Job Hazard Analysis, Qualified Person, and Confined Space.

1.4 SUBMITTALS

A. Construction Accident Prevention Plan (CAPP).

1. See Attachment "A", *Guidelines for Preparation of the Construction Accident Prevention Plan*. The Construction Accident Prevention Plan (CAPP) is a safety and health policy and program management document. The CAPP shall be job-specific, and shall address unusual or unique aspects of the Project. The CAPP is based upon USACE EM 385-1-1, where it is referred to as "Accident Prevention Plan (APP)".
2. Before beginning work at the Project Site, submit to Project Director/COR for acceptance, a detailed CAPP indicating means which will be provided to ensure: safe access to work areas, protection/safety/health of persons authorized to be at Project Site, and protection of property on and adjacent to Project Site during all phases of construction. Include in the text of CAPP a certified statement executed by Contractor's representative having broad corporate authority indicating full commitment to accepted CAPP, and level of authority in assignment of responsibilities for implementation at the Project Site. Include specific details for meetings, inspections, and training/instruction of Contractor, subcontractor, and separate contractor employees.

B. Activity and Job Hazard Analysis. Prior to proceeding with performance of work involving unusual construction operations, work practices, or work involving hazardous materials, prepare and submit written analysis to Project Director/COR. Do not proceed with work that has been identified as being potentially hazardous until Project Director/COR has expressed and recorded "no objection" to proposed methods and procedures.

C. Hazardous Materials. Contractor shall bring to immediate attention of Project Director/COR any material suspected of being hazardous which is encountered in demolition or excavation or used during execution of the work. A determination will be made by Project Director/COR as to whether to have tests performed to ascertain whether the material is hazardous; do not proceed with that part of the work until directed by Project Director/COR.

D. Hazardous Work Permits. Contractors and subcontractors shall submit written requests to Project Director/COR for all Hazardous Work Permits. Permits are required whenever construction operations include the following:

1. Hot Work. Includes all work that results in open flame such as welding, cutting, brazing, and burning. The Contractor shall provide effective fire protection and prevention at all times during such operations.
2. Confined Space Entry. As defined above, includes work in enclosed areas

such as storage tanks, bins, sewers, in-ground vaults, boilers, vessels, tunnels, manholes, pits, etc.

3. Internal Combustion Engines. The use of trucks, forklifts, pumps, or generators powered by petroleum-based fuel when used inside a building, structure, or confined space.

4. Explosive Actuated Tools. These include powder charged tools manufactured by Hilti, Remington, Ram Set, and others used for fastening purposes.

5. Explosives. Follow all applicable US and local government regulations. In all cases close coordination with controlling officials shall be effected.

E. Material Safety Data Sheets (MSDS). Refer to the requirements USACE EM 385-1-1.

F. Minutes of Meetings. Record and submit to Project Director/COR minutes of safety related meetings, including weekly tool box safety meetings and meetings of the Joint Safety and Health Committee as described below.

G. Records of Inspection. All records of inspection shall be made available to the Project Director/COR. Records of inspection shall include documentation of safety, health, and housekeeping inspections and corrective actions and timetables associated with any deficiencies encountered. Documentation shall also be made available for verification that corrective actions were implemented.

H. Accident Investigation and Reporting. Investigate and submit separate accident report on each accident resulting in lost time, disabling/fatal injuries, or damage to vehicles, property, materials, supplies, or to furniture, fixtures, and equipment.

1. Prepare reports on forms supplied by and in accordance with instructions of Project Director/COR. Include in each report Contractor's recommendations and statement of actions taken to prevent recurrence of accident. Submit report of each accident with 24 hours of accident or mishap, except as otherwise indicated by requirements or governing regulations.

2. Except as may be otherwise requested by Project Director/COR during time of contract, report major accidents and mishaps on Form (3-92) DS-1663, related instruction sheet available from the Project Director/COR.

1.5 PROJECT CONDITIONS

A. General. Continue management and implementation of safety and health program through time of construction. Comply with conditions existing and developing at Project Site, and with requests of Project Director/COR. Acceptance by Project Director/COR will not relieve the Contractor of overall responsibility for compliance with the strict interpretation of all safety and health requirements of the Contract.

B. The Project Director/COR reserves the right to suspend work when and where the Contractor's safety and health program is considered to be operating in an

inadequate manner, has severe shortcomings, or is not in compliance. This shall include failures to complete required submittals within the time periods specified.

PART 2 – PRODUCTS

2.1 MATERIALS AND EQUIPMENT

Materials, equipment, and workmanship for temporary facilities described in this Section shall be provided and performed in accordance with requirements in Section 01501, **Temporary Facilities and Controls.**

PART 3 - EXECUTION

a. IMPLEMENTATION OF CONSTRUCTION ACCIDENT PREVENTION PLAN

Management and Corporate Commitment. Implementation and management of accepted CAPP shall have full cooperation and support of management at the broad, corporate level. Full cooperation and support shall be expressed by written statement executed by a senior officer of the construction contracting firm/corporation, included with the CAPP as described in this Section.

Safety and Health Rules. The Contractor shall establish and enforce clearly written, definitive rules to be followed by employees of Contractor, subcontractors, and separate contractors at Project Site, applicable for performance of each unit of work. Prominently post notices in English, the host national language, and third country languages, if appropriate, stating that failure to comply with safety and health rules may cause immediate termination of employment. Post safety and health rules at the Project Site and provide a copy to each subcontractor prior to the commencement of work.

Emergency Resources. The Contractor shall establish, jointly with OBO, a listing of telephone numbers and location of ambulance, physician, hospital, fire, police, and other sources of emergency assistance. This information shall be conspicuously posted in several locations on Project Site.

Emergency Communication. Wireless telephone service shall be the preferred method of emergency communications. Emergency communication access shall be available to site medical personnel and nearby medical clinic or hospital.

Emergency Plans. The Contractor shall establish, jointly with the Project Director/COR and OBO Site Security Manager, plans to ensure safety of all persons at Project Site in the event of fire or other emergency, and review with all effected employees. Emergency plans shall be tested quarterly using drills to ascertain and ensure their effectiveness. Testing of emergency plans shall be conducted jointly by USG and Contractor staff.

Plans shall include: Escape procedures and routes, method of accounting for employees following emergency evacuation, identification of source and location for rescue and medical assistance, means of reporting emergencies, and persons to be contacted for information or clarification.

Planning for Project shall include total system response capabilities to minimize consequences of accidents, natural disasters, or other emergencies.

On-site emergency planning shall be integrated with off-site emergency support.

The number of persons permitted in any location shall be limited to rescue and escape capability, as determined by Contractor and in concurrence with Project Director/COR.

Emergency alert systems shall be identified, selected, installed, and tested to alert all persons likely to be affected by existing or imminent disaster conditions, and to alert and summon personnel and equipment comprising emergency response capability.

General Orientation. Contractor to provide orientation for new employees regarding safety and health policies, and work rules.

Specific Training.

Provide specific training to supervisory personnel and all craft workers of the Contractor and subcontractors in proper use and care of specific personal protective gear, equipment, and clothing.

Contractor and subcontractor employees shall be trained and supervised by qualified persons to perform, safely and confidently, recognized hazardous work operations and work performed with hazardous conditions to which they have been assigned.

Safety and Health Program Manager (SHPM).

Assign to the Project Site a full-time SHPM whose duties shall be the effective implementation, coordination, and enforcement of the CAPP. Provide support to the SHPM for the duration of the Contract. Notices posted at Project Site shall name the SHPM and describe the authority held by the position.

Qualification. The SHPM shall be a qualified, experienced construction industry professional having ability and authority to manage CAPP. The SHPM shall be qualified to anticipate, identify, evaluate, and implement corrective action in relation to potential safety and health hazards and dangerous exposures.

Joint Safety and Health Committee. Establish for the project, a functioning Joint Safety and Health Committee. Membership to include management or supervisory personnel of the Contractor and subcontractors and OBO representatives as may be needed. The Joint Safety and Health Committee, chaired by the SHPM, shall meet at regularly scheduled times and at other times as determined by the Project Director/COR. The committee shall:

Coordinate the management of safety and health activities and actions for effective protection.

Determine implementation of new safety and health measures related to forthcoming construction activities.

Anticipate and analyze potentially hazardous conditions, and implement safe and

healthy solutions.

Perform Activity and Job Hazard Analysis for work activities involving unusual construction operations, work practices, or work involving hazardous materials. Develop methods and procedures to reduce identified hazards to greatest extent possible.

Inspections.

Frequent safety, health, and housekeeping inspections shall be conducted by qualified persons of temporary structures, fabrication shops, material, machinery and equipment at the Project Site. All inspections shall be documented by qualified persons. Documentation shall include any deficiencies encountered along with details and timetable for corrective actions.

The SHPM shall be responsible to identify and coordinate all safety, health, and housekeeping inspections.

The SHPM shall be responsible to verify, document, and ensure that all corrective actions have been implemented.

Tool Box Meetings. Contractor shall hold "tool box" safety meetings once each week. Require attendance by all tradespersons, laborers, foremen, and supervisors at Project Site; include those of separate contractors. Discuss current construction operations, analyze hazards, and communicate solutions.

b. TOOLS, EQUIPMENT, AND MACHINERY

Quality. Hand tools, power tools, equipment, machinery, materials, and personal protective apparatus shall be of manufacturer listed by U.S. or internationally recognized testing laboratory for specific application for which they are to be used. They shall be quality products recognized for professional construction use, applications, and work practices.

Safe Clearance Procedure. Prior to initial use, and periodically thereafter at times of continued use, provide inspections of construction tools, equipment, and machinery. Do not permit continued use of tools, equipment, and machinery that are not in satisfactory working condition. Immediately upon identification of damage or malfunction, tag and remove from Project Site. Do not allow return of items until repaired or reprocessed in compliance with industry practice. Engage qualified persons to make such inspections and repair. Prepare written records, including recommendations for corrections of defects and misapplication.

Machinery and Mechanized Equipment. Prior to being placed in use, all machinery and mechanized equipment shall be inspected and tested by qualified personnel and certified to be in safe operating condition. Records of tests and inspections shall be maintained at the site by the Contractor and shall become part of the official project file.

Tower cranes, crawler cranes, truck and wheel mounted cranes and material hoists shall be erected, tested, maintained, and repaired in accordance with the manufacturer’s recommendations. All actions shall be documented.

Tower cranes shall be inspected quarterly for operation and structural integrity in accordance with manufacturer's recommendations.

Hoisting Equipment. Provide general-use manufactured apparatus for hoisting and material handling equipment, suitable for Project configuration, that is, for the number of stories and similar considerations and for the suitable handling of materials, fabrications, tools, equipment, work platforms, and, where applicable, for the transportation of crafts persons between grade and floor levels.

Walking and Working Surfaces.

Scaffolding shall be a standard, medium- to heavy-duty welded tubular frame or a project-designed steel tube and clamp system. All components shall be manufactured and tested according to international standards. All types of manufactured scaffolding systems shall include the scaffold manufacturer's integrated access stairway sections, handrails, and walking platforms.

For all cast-in-place concrete installations of walls, columns, beams and slabs, provide manufacturer's standard access scaffolding and work platforms which are an integral part of a pre-engineered, reusable, factory built concrete forming/shoring system consisting of pre-fabricated modular metal framed plywood or all metal panels.

Protect openings in floor slabs of more than 0.03 square meters (46 square inches) in area. Provide guardrails at floor slab edges that are not yet permanently walled off, where located more than 1.25 meters (4 feet) above grade or adjoining floor/deck surface.

Access to Construction Operations. Provide ramps, stairs, ladders, and similar devices for craftsperson, inspector, authorized visitor, and USG personnel access and egress.

Noise Reduction. Minimize the generation of noises through the efficient and shielded use of materials, tools, processes and procedures. Restrict the use of noise or impact-producing tools to necessary prosecution of the work. These actions shall seek to minimize complaints from nearby occupancies, and comply with requests of local authorities.

c. SITE MAINTENANCE, PROTECTION, AND SANITATION

General. Provide indirect, work-related, temporary support facilities and services as described below in conjunction with performance of work at Project Site.

Comply with Host Country governing regulations as enforced by authorities; including building codes, requirements of utility companies, health/safety regulations by police/rescue/fire departments, environmental protection regulations, and similar applicable regulations.

Inspections. Arrange for required inspections, certifications, and permits, for installation and use of each temporary facility, prior to use; as may be required by governing authorities and franchised service vendors.

Maintain temporary facilities in clean, sanitary, and safe operating conditions; and

do not allow conditions of use to become inefficient, overloaded, hazardous, or otherwise deleterious to the USG's interests; comply with the Project Director's/COR's requests.

Fire Protection. Except as otherwise indicated, and in every instance, expedite/complete and place into service permanent fire protection system and equipment. Prior to the time permanent facilities are placed into service, provide temporary fire protection facilities, as will be adequate for conditions at the Project Site. Where possible, arrange jointly with Project Director/COR and local fire department to respond to calls for assistance and service in cases of fire emergency. Provide temporary portable fire extinguishers, complying with applicable provisions of NFPA 10, Standard for Portable Fire Extinguishers, and UL rated; multi-purpose dry chemical type, 5.0 kg size, UL-rated "4-A:60-B:C." Maintain unobstructed access to fire extinguishers and locate at each prime point of access to each story of construction, and at each principal office, lunch room, fabrication shop, storage enclosure, gate/guard house, and similar temporary facility at Project Site. Prohibit smoking, except in designated areas of relatively low fire hazard. During welding, cutting, and burning, comply with NFPA 51B, Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, in fire-hazardous areas of exposure, provide stand-by fire-protection personnel and adequate supervision of operations.

First Aid. At project sites on which more than 99 and less than 300 persons are employed (greatest number being the total number of employees on a shift), establish and equip, as directed by a licensed physician, a first aid station staffed full time with a professional nurse trained in emergency response. If medical clinics or hospitals are accessible within five minutes of the project site, the facilities may be approved by a licensed physician for use, in lieu of a first aid station.

Barricades, Closures, and Traffic Control. Provide substantial barricade-type closures and rails at locations where encroachment of a physically hazardous condition in construction is possible, for equipment, tradespersons, and others at or adjoining the Project Site. Provide sidewalk bridge type protective structure where traffic, vehicular and pedestrian, cannot be excluded from hazardous areas under and nearby overhead work in progress. Provide appropriate warning signs, flashing-type warning lights, and adequate general lighting at principal barricades which are not intended to be crash-proof. Maintain barricades through periods of exposure to hazardous conditions.

Roadways and Walkways. Establish safe roadways and walkways in and around Project Site, and connecting with adjoining public thoroughfares. Provide signage and other markings; including traffic control signage and signals, as may be necessary and useful in controlling traffic and in restricting traffic from passing through other areas. Cooperate with local officials in the establishment and/or adjustment of street entrance/exiting signals and signs. Do not allow established traffic ways to become encumbered or obstructed with work activities, materials, parked vehicles, equipment, and similar elements. In particular, keep established entrance-and-exit passages clear for medical emergencies, escape, fire fighting, and other emergency access and egress.

Environmental Protection. Provide facilities and services as may be required by governing authorities to protect the environment; as it may be affected by performance of the work at the Project Site, and elsewhere, wherever work is in progress. Minimize the generation of wastes and avoid the pollution of every element of the environment. Prohibit the discharging and accidental loss of substances from the construction process that could possibly contaminate the atmosphere, surface or ground water, soil or subsoil.

Excavation and Demolition.

The Contractor, before commencement of any part of excavation or demolition, shall give any notices required to be given to adjoining landowners or other parties. Contractor shall initiate all necessary protective provisions prior to excavation or demolition of any site improvement.

Before excavation or demolition of any site improvement, Contractor shall examine structural condition of all adjacent structures or infrastructure, whether on site or on adjoining property. Based on examination, where there is reason to believe planned excavation or demolition will cause damage or unsafe conditions to adjacent structures or infrastructure, excavation or demolition operations shall not be performed until means have been provided to insure stability and prevent collapse of adjacent structures or infrastructure. Such means shall consist of sheet piling, shoring, bracing, underpinning, or equivalent.

Other protective provisions shall include, at a minimum, temporary protective coverings or enclosures of adjoining work, warning signs, and similar provisions.

Dust Control. Where and when applicable, implement a suitable program for dust control in and around the Project Site, designed to reduce dust generation/ distribution to reasonable level. Coordinate with environmental protection program.

Rodent, Pest, and Vermin Control. Employ specialized services to eliminate or minimize the threat of deleterious effects from insects, animals, and other vermin at Project Site. Up to and at the time of substantial completion, the Project and Project Site will be relatively free of entrenched and harbored pests of every description. Employ only environmentally safe methods and products in the control of rodents, pests and other vermin.

Potable Water. Where reasonably possible, provide potable water for entire water requirement of construction period. Where and when that is not possible, provide potable water for drinking and other uses where specified; clearly marked with signage in multiple languages as appropriate for site location; with source as Contractor's option: City-controlled piped water, well on site, commercially bottled water, or other reliable source. Demonstrate on a monthly basis to the Project Director/COR that the potable water from all selected sources is safe for human consumption. Sterilize piping of temporary potable water systems prior to use.

Construction Site Sanitation and Health Facilities.

Toilets Facilities and Restrooms.

Toilet facilities are defined as enclosures containing one or more toilet fixtures or commodes for the purpose of defecation or urination or both. A urinal is a toilet fixture maintained within a toilet room for the sole purpose of urination. A toilet facility or restroom may be a temporary structure, portable units, or a permanent facility.

The Project Site shall be provided with adequate toilet facilities. Separate facilities shall be provided for each sex and properly labeled in English and the commonly understood local language. Pictograms shall be used. The sewage disposal method shall comply with the requirements of the authority having jurisdiction. Toilet facilities shall be provided so as to be readily accessible to all employees. As far as is practicable, toilet facilities shall be located within sixty-one (61) meters (200 feet) of all locations where workers are regularly performing the work. The number of toilet fixtures shall be based on the anticipated maximum number of workers at Project Site. An adequate supply of toilet paper shall be maintained at all times. A hand-washing lavatory shall be provided in close proximity to all toilet facilities.

The construction and installation of toilet facilities shall be accepted by the Project Director/COR and shall be in compliance with, if appropriate, all-applicable local jurisdictional codes. The floors, walls, partition, and doors of all toilet facilities shall be of a hard, impervious finish that can be easily cleaned. Floors shall be concrete. Walls and partitions shall be constructed of concrete masonry units, and doors shall be of metal or solid wood. All surface finishes shall be chosen to facilitate cleaning and the maintenance of the highest standards of sanitation.

Each toilet or commode shall occupy a separate compartment or stall which shall be equipped with a door and latch. Partitions and doors shall be of nonabsorbent materials. The walls of compartments, stalls, or partitions between the toilets or commodes may be less that the height of room walls, but the top shall not be less than one hundred seventy-three (173) centimeters (5 feet, 8 inches) from the floor and the bottom not more than thirty (30) centimeters (1 foot) above the floor.

In all newly constructed toilet rooms, the floors and exterior walls to a height of fifteen (15) centimeters (6 inches) above the floor shall be of watertight construction to facilitate cleaning and sanitation.

Every toilet fixture, commode, or urinal shall be so installed that the space around and behind the fixture can be easily cleaned.

Where non-sewer waste disposal systems are permitted, these shall be of a type accepted by the local health authorities having jurisdiction. These systems shall be maintained in a sanitary condition.

Lavatories and Personal Washing Facilities.

A lavatory is a basin or similar vessel for washing hands, arms, face and head. Adequate facilities for maintaining personal cleanliness shall be provided at the Project Site. Facilities shall be convenient for employee access and shall be maintained in a sanitary condition.

Lavatories shall be provided at or adjacent to all toilet facilities. Lavatories with adequate hot (43°-60°C or 110°-140°F) and cold water shall be provided. Mixing or combination supply fixtures are preferable. Sixty (60) centimeter diameter (24 inch) basin rims shall be considered as equal to one lavatory. In all instances, a dispenser containing a suitable skin cleaning agent shall be provided at each lavatory.

Drinking Fountains and Dispensers.

Provide an adequate number of drinking water fountains or dispensers, distributed for convenience and efficiency, around the Project Site and service support areas. Maintain an adequate supply of sanitary disposable paper cups and waste receptacles at each water dispenser.

Provide bottled drinking water where piped potable water service is not available.

Shower Facilities.

Where employees are exposed to skin contamination with poisonous, infectious, or irritating material (cement, lime, solvents, etc.), or where unsanitary or unhealthful working conditions require bathing before leaving the Project Site, the Contractor shall provide shower facilities in the ratio of one per each fifteen persons so exposed. Showers shall be supplied with ample hot (43°-60°C or 110°-140°F) and cold water.

A dispenser containing a suitable skin-cleaning agent shall be provided at each shower. Individual hand towels of cloth or paper shall be provided. Proper receptacles or other sanitary means shall be provided for the disposal of used towels. The provision of a loop towel rack for general or common use shall be prohibited as unsanitary.

Laundry Facilities.

Provide laundering of work clothing and coveralls that have become contaminated with poisonous, irritating or infectious material (cement, lime, solvents, etc.). The Contractor shall provide clean sets of laundered clothing or coveralls as part of the protective clothing requirement.

Should the process in which the worker is engaged be such that the individual's work clothing becomes wet or has to be washed between shifts, the Contractor shall make such provision to dry such clothing before reuse.

Changing Rooms.

Changing or dressing rooms shall be provided whenever it is the local practice or a requirement to change from street clothing to work clothing.

Street and work clothing shall not be stored in contact with each other in changing rooms.

Lunch Rooms, Mess Halls, Dining Facilities, and Food Service Operations.

An enclosed facility shall be provided and set aside specifically for employees to eat lunch at the Project Site. The minimum area per person shall be specified as 1.0 square meter or 11 square feet. The Contractor shall provide such enclosed facilities to accommodate at one time 50% of the maximum number of non-office-occupant personnel anticipated and as authorized to be at Project Site.

These facilities shall be equipped with tables and chairs or benches to seat the number of persons anticipated. The Contractor shall specify suitable floor, wall, and ceiling finishes, doors and windows, screening, and suitable fixtures and accessories. The Contractor shall provide general lighting, HVAC system, and drinking fountains or dispensers.

These dining facilities shall be physically separated from toilets at a minimum distance of sixty-one (61) meters (200 feet). Dining facilities shall be physically separated from all locations where there is the threat of exposure to toxic or infectious materials.

Perishable home-prepared lunches are a potential source of food-borne illness when stored at room temperature. Accordingly, the Contractor shall provide refrigeration facilities capable of maintaining a temperature of 7°C or 45°F or lower for the storage of lunches prior to consumption. Should local law require that meals be provided, the Contractor shall accommodate those requirements.

The Contractor shall provide space, utilities, and support services for the installation of vending machines for drinks and incidental foods. The Contractor shall establish, administer, and supervise service contracts with local vending firms. These contracts and the plan for their execution in practice must be cleared by the Project Director/COR and the Site Security Manager.

If the Contractor provides prepared or pre-prepared catered meals at the Project Site, all employee food service facilities and operations shall meet and comply with relevant requirements of the FDA 2001 Food Code or latest edition.

Waste Handling and Janitorial Services.

General. Provide proper and adequate segregated waste containers for the collection and removal of waste materials in different categories. These include, but are not limited to: hazardous wastes, flammable wastes, sanitary and health-care wastes, garbage, wastes for recycling as required by local authorities, inert and dry wastes, and incidental debris from the construction process. Dispose of general non-organic wastes at seven (7) day intervals. Dispose of organic, garbage, and similar temperature-sensitive wastes at three (3) day intervals when the average outdoors-daily maximum temperature can be expected to be above 18°C. Clean waste containers regularly and adequately. Dispose of wastes in a lawful manner.

Contractor may develop and implement a waste management plan that quantifies material diversion goals and methods of salvage and recycling in order to earn LEED points as described in Contract Section C.

On a daily basis the Contractor shall keep the Project and Construction Site clean and clear of accumulated wastes, including surplus materials, trimmings, incidental demolished work, and construction debris. Clean completed elements and portions of work, and maintain in "broom clean" condition, except as otherwise indicated by the Project Director/COR.

On a daily basis, provide janitorial services, including the restocking of disposable products, for the maintenance of temporary offices, security spaces, toilets, first-aid rooms, lunchrooms, shower/locker rooms, and similar facilities. Scrub toilet and first-aid room fixtures and floors daily, and scrub floors and walls of shower rooms daily. Provide weekly cleaning, damp mopping, or vacuuming, as may be appropriate, for other floors. Provide monthly washing of windows and cleaning of other walls, ceilings, light fixtures, and similar facility surfaces. Comply with the Project Director's/COR's specific requests to maintain facilities in a reasonably clean and sanitary condition at all times. Extend janitorial services to include permanent facilities as may be authorized for use as temporary facilities.

1. END OF SECTION 01521

<<< The following document is an example of a CAPP >>>

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U.S. DEPARTMENT OF STATE
OVERSEAS BUILDINGS OPERATIONS

Project Name & CONTRACT No. ----------

CONSTRUCTION ACCIDENT PREVENTION PLAN (CAPP)

NAME OF CONTRACTOR:

POLICY.
The (name of Contractor) accident prevention policy, ensures that all of our employees have a firm understanding of our company's position regarding the protection of all persons, public, and property during all phases of new construction and renovation works, of U.S. Department of State buildings. In implementation of the accident prevention policy, (name of Contractor) accepts full responsibility for the establishment and implementation of an effective construction safety and occupational health program at the project site.

PURPOSE.
The Construction Accident Prevention Plan (CAPP), herein, establishes organizational and management elements necessary to implement an effective Safety and Health Program. The CAPP, as a policy and management document, will comply with the latest edition, of the U.S. Army Corps of Engineers Safety And Health Requirements Manual EM 385-1-1.

The objective of (name of Contractor) is to provide for a safe working construction environment, a strong safety awareness by all of our supervisors and workers, and the safe use of tools, machinery and equipment.

REFERENCE DOCUMENTS. The _____Project will comply with the following regulations:

- U.S. Army Corps of Engineers, *Safety and Health Requirements Manual,* EM 385-1-1, latest edition.
- U.S. Department of State Foreign Affairs Manual Volume 6 Subchapter 610, *Safety Health and Environmental Management Program*, with latest changes.
- NFPA Code 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations*.
- ANSI A10 series standards for Safety Requirements for Construction and Demolition.
- NFPA Code 51B, *Standard for Fire Prevention During Welding, Cutting, and Other Hot Work.*
- NFPA 70, *National Electrical Code.*
- NFPA 10, *Standard for Portable Fire Extinguishers.*

- *2001 Food Code*, Food and Drug Administration, National Technical Information Service Publication PD2002-100819, or latest edition.
- *Rigging,* by James Headley, Crane Institute of America Publishing Company, Mainland Florida, 2001.

ORGANIZATIONAL/ADMINISTRATIVE RESPONSIBILITY FOR CAPP.
Mr./Ms. (name), the Project Manager, has been given full authority, responsibility, and support by (name of Contractor) for the administration and implementation of the CAPP.

Safety and Health Program Manager (SHPM).
To assist our Project Manager, a qualified Safety and Health Program Manager (SHPM) will be appointed (full time) to administer and implement the (CAPP). The Project Manager and the Safety and Health Program Manager have been delegated with corporate responsibility and authority to identify safe and unhealthful conditions and to take corrective action to abate or eliminate such conditions. The SHPM is a qualified, experienced, construction industry professional possessing the ability and authority to manage this CAPP. The SHPM will anticipate, identify, evaluate, and implement corrective action to abate or reduce potential safety and health hazards and dangerous exposures.

Joint Safety and Health Committee.
(name of Contractor) will establish for the duration of the project a functional Joint Safety and Health Committee for this project. Membership will be by official appointment and will include supervisory personnel from our company and from our subcontractors. The SHPM will coordinate and delegate the activities of the Committee.

PROGRAM MANAGEMENT REQUIREMENTS.

Emergency Plans.
(name of Contractor) will establish jointly with Project Director/COR, in the event of fire or other emergency, Emergency Plans for the safe evacuation of all persons at the Project Site. Emergency Plans that are relative to (name of Contractor) construction operations will be submitted to the Project Director/COR for acceptance. Plans will be tested/evaluated monthly to ascertain their effectiveness.

First Aid Station.
(name of Contractor) understands that on OBO construction project sites on which more than 99 and less than 300 persons are employed (greatest number being the total number of employees on a shift) at the site, there shall be established and equipped, as directed by a licensed physician, a first aid station staffed full time with a professional nurse trained in emergency response. If medical clinics or hospitals are accessible within five minutes of the project site, the facilities may be approved by a licensed physician for use, in lieu of a first aid station.

Activity and Worker Hazard Analysis.
The Project Manager, SHPM, and the Joint Safety and Health Committee, will assess safety and health issues associated with special construction activities in the schedule. Prior to each major

phase of the work, the Project Manager will prepare and submit an Activity and Worker Hazard Analysis report to the Project Director/COR for acceptance.

Safety Training and Orientation.
"New Hire" training will be conducted by ___. New employees to the Project Site will be required to attend an employee safety orientation program, at which time, safety rules will be explained by the SHPM.

A copy of the project safety rules will be given to each new employee, who will be required to sign a statement stating that he/she has been instructed in the safety philosophy of the company, have been given a copy of the project safety rules, and understand them.

In addition, all employees will observe and obey rules at Post governing the conduct and behavior of persons performing construction work in an occupied U.S. Department of State facility.

Violation of Safety Rules.
(name of Contractor) will initiate a procedure/mechanism to discipline all workers who repeatedly violate safety rules. (Example: the procedure may include the termination of an employee after one verbal and two written warnings for the same violation).

Tool Box Safety Meetings – Coordination and Communication.
To ensure better safety and health awareness, (name of Contractor) will communicate, through weekly Tool Box meetings, a corporate safety and health philosophy to all construction personnel. Records of attendance and documentation of topics for each meeting will be kept. Topics will include but not be limited to protection of employees, personal protective clothing/equipment, fall protection, fire prevention, fire protection, emergency evacuation procedures, and the safe use of power tools and machinery.

Material Safety Data Sheets.
Material Safety Data Sheets (MSDS) for all hazardous chemical substances in use on Project Site will be obtained from the manufacturer and kept on Project Site. Workers who are assigned to work with hazardous substances will be trained in the proper procedures and precautionary measures to be taken while using such substances/products.

Safe Clearance Procedure.
Prior to initial use, and periodically thereafter at times of continued use, (name of Contractor) will inspect all construction tools, equipment and machinery. (name of Contractor) will not permit continued use of tools equipment and machinery which are not in good condition. Damaged or malfunctioning tools or equipment will be tagged and immediately removed from service.

Hazardous Work Permits.
(name of Contractor) and subcontractors will submit written requests to Project Director/COR for Hazardous Work Permits when construction operations include the following:

1. Hot Work. Work that results in open flames such as welding, cutting, brazing and burning. (name of Contractor) will provide effective fire protection and prevention at all times during such operations.
2. Confined Space Entry. Work in enclosed areas such as storage tanks, bins, sewers, in-ground vaults, boilers, tunnels, manholes etc.
3. Internal Combustion Engines. Use of trucks, forklifts, pumps, or generators, powered by petroleum-based fuel, when inside a building structure or confined space.
4. Explosive Actuated Tools. Powder charged tools (Hilti, Remington, Ram Set and other manufactures) used for fastening purposes.

Temporary Electrical Power.
(name of Contractor), if requested, will submit to Project Director/COR, for acceptance, a plan of proposed temporary power distribution and the means of protection of all circuits including receptacles, grounding, and ground fault circuit interrupters.

Inspections.
Under the direction of the SHPM, (name of Contractor) will provide for frequent safety, health, and housekeeping inspections of Project Site. Temporary structures, fabrication shops, material storage areas, all machinery, tools and equipment will be inspected to ensure compliance with USACE Safety and Health Requirements Manual EM 385-1-1. Records of inspections, and a timetable for corrective action will be maintained.

Reporting Work Related Injuries.
All work related injuries will be reported to Project Director/COR. A daily log of first aid treatment will be kept at the location of the first aid station. Injuries requiring off-site medical treatment will be reported to Project Director/COR. An accident report will be completed by a supervisor or foreman for each work related injury or illness resulting in lost time.

Accident Investigation.
All accidents involving death, multiple hospitalizations, or excessive property damage will be officially investigated and reported under the authority and direction of the Project Director/COR.

2. END OF ATTACHMENT "A" SECTION 01521

SECTION 02833 - ORNAMENTAL METAL SECURITY FENCES

PART 1 - GENERAL

1.1 SUMMARY

A. The extent and locations of ornamental metal security fences (OMSF) are shown on the Contract Drawings, and include devices for anchorage of fence units to substrates.

B. Related Sections include the following:

1. Division 3 Section "Concrete."
2. Other Sections for gates and sally port enclosures.

1.2 PERFORMANCE REQUIREMENTS

A. Detail, fabricate, and install metal fencing as shown, and in a manner that will produce maximum resistance to penetration of the enclosed property by intruders, including resistance to scaling or climbing without the use of ladders. Fabricate for maximum strength against the use of ordinary hand tools to bend pickets in a manner that would enlarge openings sufficiently to allow passage of intruders through the fence.

1.3 SUBMITTALS

A. Product data, for each type and grade of metal used in fabricating units, and for bolts and accessory items used in assembly and installation. Include manufacturer's product data for materials to be used in finishing or painting fence units.

B. Shop drawings for each type and size of metal fence unit. Show layout at same scale as site plan; typical plan, elevation, and section of units, including bracing, at 1:20 scale; and joint/anchorage details at 1:5 scale. Include details of fence posts, corners, and terminations. Include structural analysis of resistance to wind loading.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver prefabricated security fence units and support bracing/anchorage units to project site, completely assembled and prefinished, with finish fully protected during handling, shipping, storage, and delivery/installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Manufacturer/fabricator of ornamental metal security fence units include, but are not limited to, the following experienced producers of custom ornamental metal work:

1. Am. Hardware & Orn. Iron Co.; Tulsa, OK.
2. Anchor Fence, Inc.; Baltimore, MD.
3. Builders Fence Co., Inc.; Sun Valley, CA.
4. Cassidy Bros. Forge, Inc.; Rowley, MA.
5. Construction Services, Inc.; Decatur, IL.
6. Cyclone Fence Div., USX Corp.; Chicago, IL.
7. Humane Equipment Co.; Baraboo, WI.
8. Lawler Machine & Foundry Co., Inc.; Birmingham, AL.
9. LMC Corp.; Paterson, NJ.
10. Poma Corp.; West Palm Beach, FL.

2.2 MATERIALS, GENERAL

A. Steel Shapes, Plates, and Bars: ASTM A 36.

B. Steel Structural Tubing: ASTM A 618; welded or seamless, high-strength, low-alloy, structural tubing; Grade Ib; shapes/sizes and wall thicknesses as indicated.

C. Steel Structural Tubing: ASTM A 501; hot-formed, welded or seamless structural tubing; shapes/sizes and wall thicknesses as indicated.

D. Welding Rods and Bare Electrodes: Provide as required by AWS specifications, for the metal and alloy to be welded.

E. Bolts and Fasteners: ASTM A 320, AISI Type 300-series, stainless steel bolts and nuts. Where within reach from attack-face of fence, provide non-removable bolt/nut units (not removable by use of commonly available tools). Provide stainless steel washers.

F. Concrete Inserts: Furnish anchorage units to be placed in concrete substrate; of hot-dip galvanized cast-iron/malleable-iron body, design as indicated: ASTM A 153 zinc coating, ASTM A 47 castings.

G. Setting/Anchoring Cement: Nonshrinking, nonstaining, hydraulic-controlled expansion cementitious compound; factory prepackaged for mixing with water at project site for a pourable and trowellable mix; recommended by manufacturer for exterior exposure without protective coating, sealer, or waterproofing. Provide product equivalent to "Super Por-Rock" by Minwax Const. Products Div.

H. Expansion Shims: To allow for thermal expansion of fence units, provide fluorocarbon resin (or similar) plastic washers, pads, and slip sheets in bolted connections between units, and between fence components and anchorages.

I. Shop Primer Paint - Normal Exposure: Fabricator's baked-on, lead-free, modified alkyd-base, ferrous-metal primer, which is compatible with finish system specified in "Painting" or "Special Coatings" section of these specifications, and which will provide long-term resistance to corrosion from exterior exposure, and firm undercoat for field-applied topcoats, after prolonged construction-period exposures. Comply with performance requirements of FS TT-P-645, and with paint manufacturer's instruction for baked-on primer coat application.

J. Shop Primer Paint – Severe Exposure: Organic zinc-rich coating, with zinc-dust content not less than 80 percent by weight of non-volatile content; with vehicle base selected for compatibility with specified finish coating system. Comply with paint manufacturer's instructions for method of application and surface pretreatment.

2.3 FABRICATION

A. General: Cut and form/shape members to sizes and shapes required, for assembly of fence units of sizes indicated. Weld joints of assembly with welds all around, to produce joints of full-member-strength, with no possible moisture penetration. Grind welds reasonably smooth, but not necessarily flush. Prefabricate units in plant by welding, to the greatest extent possible. Provide bolted connections for bracing elements and similar parts, but only to the extent units must be disassembled for delivery to project and for installation by method indicated.

1. Drill anchor bolt holes accurately spaced as shown, oversized by 6 mm (1/4 inch) above bolt size, for installation tolerance.
2. Provide for thermal movement of units, amounting to plus-or-minus 1 mm in 1 m (1/8 in. in 10 ft.) of fence length.
3. Close ends of hollow members (pipes/tubes) which are not butt welded tight against another member in the assembly. Close with 6 mm (1/4 inch) thick steel plate, slightly recessed and welded all around for tight seal, except as otherwise shown.
4. Avoid the use of bolts and screws exposed to and accessible from the threat side of fence. Where unavoidable, provide nonremovable type fasteners in the assembly.
5. Ease exposed metal edges of fabricated units, to approximately 0.8 mm (1/32 inch) radius, prior to finishing.

B. Shop-applied Finish, General: Comply with applicable provisions/recommendations of NAAMM Metal Finishes Manual, and the following:
1. Prepare ferrous metal surfaces by cleaning in compliance with SSPC-SP6, "Commercial Blast Cleaning."

2. Apply shop primer paint coat in accordance with paint manufacturer's recommendations for application and baking.
3. PVC Special Coating: Provide Fabricator's standard 10 mil (0.254 mm) dry film thickness, of polyvinyl chloride coating, thermally fused on preheated, prime-coated steel surfaces; of color indicated.
4. Polyurethane Special Coating: Provide Fabricator's standard 2.5- to 3.0-mil (0.0635 to 0.0762 mm) dry film thickness, of powdered polyurethane, applied electrostatically and thermally fused to form smooth coating on prime-coated steel surfaces; of color indicated.
5. Polyester Special Coating: Provide Fabricator's standard 2.0 to 2.5 mil (0.0508 to 0.0635 mm) dry film thickness, of powdered polyester resin, applied electrostatically and thermally fused to form smooth coating on prime-coated steel surfaces; of color indicated.

PART 3 - EXECUTION

3.1 PREPARATION

A. Coordinate fence installation with work of other sections of these specifications. Deliver concrete inserts to Installer of concrete substrates that will support fence units, prior to time scheduled for placement of concrete. Furnish templates and complete instructions for placing inserts.

B. Check concrete substrate and anchorage inserts, for compliances and tolerances required to facilitate installation of fence units. Coordinate beginning of installation with curing of concrete substrate, and with other work at project site; for both temporary security utilization of fence enclosure, and for preservation of metal work and finish.

3.2 INSTALLATION

A. Install fence units as indicated. Set plumb and level, and true to line-of-slope as indicated; accurately located with respect to adjacent units, property lines, and adjoining work. Comply with Fabricator's instructions on unpacking, handling, preservation/removal of protective covering, and assembly of fabricated elements. Set base/support plates of units in confined bed of setting/anchoring cement, without voids. Trim away excess bedding material, and tool exposed joint faces for neat, water-resistant exposure.

B. Anchor fence units to substrate with bolts and expansion shims as indicated; and fasten units together with bolts/screws and expansion shims. Achieve nonremovable status of fasteners, except where otherwise indicated.

C. Avoid unnecessary cutting, drilling, and welding of prefinished fence units. Where necessary to cut, drill, or weld, repair shop coat(s) of finish (primer and finish coat, if any) in manner recommended by paint manufacturer, and in manner which will provide corrosion protection equivalent to shop-applied coat(s) in-so-far as this is possible.

D. Complete the installation of corner posts, special bracing, gates, special security features, and other elements of the work indicated as work of this section.

E. Clean exposed surfaces of fence work, and touch up abraded finishes to restore appearance and corrosion resistance.

END OF SECTION 02833

SECTION 02843 - PERIMETER GATE FACILITIES

PART 4 - GENERAL

4.1 SUMMARY

A. The work of this section includes, but is not necessarily limited to, the following elements located in and around the gatehouse at entrance/exit gate locations:

1. Gates for passage of vehicles, in and out of the project site, on and off the post.
2. Active roadway barriers, for vehicle arrest at sally port configurations in perimeter protection system.
3. Bollards, to confine vehicular traffic to designated roadways at entrances/exits of the project site.
4. Pedestrian gates/turnstiles, to control foot traffic at entrances/exits of the project site.
5. Related Sections include the following:

    a. Division 3 Section “Concrete” for requirements of concrete foundations, barriers, fences, slabs, and other elements of work in and around entrance/exit gates of the perimeter.
    b. Division 2 Section “Ornamental Metal Security Fences” for perimeter fencing work adjoining or integrated with gatework.
    c. Division 5 Section “Metal Fabrications” for structural steel and metal fabrications required at entrance/exit gate locations.
    d. Division 7 Sections for roofing, insulation, and sealant work required for enclosed spaces at entrance / exit gate locations.
    e. Division 8 sections for doors, window framing, glass, glazing, hardware, and related work required for enclosed spaces at entrance/exit gate locations.

f. Division 8 Section “Exterior Security Windows” for service window unit(s) required in guard booth wall(s), as shown.
g. Division 9 sections for field applied finish work at entrance/exit gate locations.
h. Division 15 sections for piping, HVAC work, and/or sanitary facilities required in and around the gatehouse(s) at entrance/exit location(s).
i. Division 16 sections for electrical/electronic work; including lighting, interlocks, communication systems, and alarm-security-surveillance-control-detection-recording devices; as required in and around the gatehouse(s) at entrance/exit location(s).

4.2 SUBMITTALS

A. General: For each type and size of element specified in this section, submit the following as applicable to the units; in accordance with Division 1:

1. Product data for each primary material used in fabricating custom produced elements of the work; along with manufacturer’s descriptive literature for standard or customized products, fabrications, assemblies, devices, and accessory items used to produce work of this section. Include mechanical, electrical, and control data for operative and motorized units, along with spare parts listing and maintenance manuals. Include performance charts and curves. Include complete list of equipment and materials. Identify applicable industry standards and how they apply to specific components. Include installation instructions.
2. Shop drawings for each type and size of customized fabrication or assembly, showing installation requirements for each element of the work of this section. Show plans, elevations, and sections at not less than 1:20 scale, and details at 1:5 scale. Shop drawings shall contain complete wiring and schematic diagrams; and any other details required to demonstrate that the system has been coordinated and will properly function as a unit. Drawings shall show proposed layout and anchorage of equipment and appurtenances, and equipment relationships to the other parts of the work including foundation and clearances for maintenance and operation.
3. Certified performance compliance documentation, to the extent elements are indicated with specific performance requirements; including actual crash test reports, equivalency certifications, design/analysis calculations, and similar data suitable for the demonstration of performance achievement.
4. Listing of Products Installation: Previous Successful Use: Information necessary to document a minimum 1-year successful field operation performance history for each type of vehicle barrier installed.
5. Test Reports: Upon completion and testing of the installed system, a test report shall be submitted in booklet form showing all fields tests, including component adjustments and demonstration of compliance with the specified performance criteria. Each test report shall indicate the final position controls.

6. Operation and Maintenance Manuals: Submit Operation and Maintenance data in accordance with Division 1.
   a. Operation instructions shall outline the step-by-step procedures required for system startup, operation, and shutdown. The instructions shall include the manufacture's name, model number, service manual, parts list, and brief description of all equipment and their basic operating features.
   b. Maintenance instructions shall include routine maintenance procedures, possible breakdowns and repairs, and troubleshooting guide. The instructions shall include piping layout, equipment layout and simplified wiring, and control diagrams of the systems as installed.

7. Spare Parts Data: After approval of the shop drawings the Contractor shall submit spare parts data for each different item of materials and equipment used. The data shall include a complete list of parts and supplies, with current unit prices and source of supply.

4.3 QUALITY ASSURANCE

A. Namplates: The vehicle barrier shall have the manufacturer's name, contact for service, and catalog or serial number permanently affixed to a plate securely attached to the equipment in a suitable location.

B. Verification of Dimensions: The Contractor shall become familiar with all details of the work, and verify dimensions in the field as required for coordination.

4.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver elements of the perimeter gate facilities to the project with assemblies prefabricated, prefinished, and equipped with devices and accessories to the greatest extent possible. Comply with Government's criteria for packaging, handling, protection, storage, and delivery.

PART 5 - PRODUCTS

5.1 MANUFACTURERS

A. Vehicle Gates: Select manufacturers/fabricators of vehicle entrance/exit gate system elements from among the following, only after it has been determined that firms are capable of producing the required sizes/capacities and qualities/performances as indicated:

1. Office or Housing Component: Select fabricator of gate panels, and matching fixed closure panel units (if any), to be same firm selected to produce ornamental

metal security fence units specified in Section 02833, "Ornamental Metal Security Fences."

2. Support Facility Compound: Select fabricator of gate panels, and matching fixed closure panel units (if any), to be same firm selected to produce chain link fence units specified in Section 02833.
3. Pre-certified vehicle gates are identified in a separate contract attachment, under section J.2.7 "DOS CERTIFIED ANTI-RAM VEHICLE BARRIERS" and Appendix A- "Security Details for Site Construction."

B. Active /Passive Roadway Barriers: Pre-certified active/passive roadway barriers are identified in a separate contract attachment, under Section J.2.7 "DOS CERTIFIED ANTI-RAM VEHICLE BARRIERS" and Appendix A "Security Details for Site Construction."

C. Pedestrian Entrances: Pre-Certified pedestrian entrances are identified in a separate contract attachment, under Section J.2.7 "DOS CERTIFIED ANTI-RAM VEHICLE BARRIERS' and Appendix A-"Security Details For Site Construction."

5.2 MATERIALS, GENERAL

A. Steel Shapes, Plates, and Bars: ASTM A 36; except where otherwise indicated, and as follows:

1. Where indicated as "high-strength" steel, provide shapes, plates, and/or bars complying with ASTM A 588, Grade C, 50 ksi (34.9 kg/sq. mm) yield strength.
2. Where indicated as tubular "high-strength" steel, provide shapes, sizes, and wall thicknesses as indicated complying with ASTM A 618, Grade Ib; 50 ksi (34.9 kg/sq. mm) yield strength.

B. Steel Finishes: Hot-dip galvanize all steel components to comply applicable standards of ASTM A 123/A 123 M for galvanizing steel products and ASTM A 153 A, 153 M for galvanizing steel hardware.

C. Steel Pipe for Bollards: Provide 273 mm (11 inch) NPS, black, steel, welded or seamless pipe, with 25.4 mm (1 inch) wall thickness (Schedule 40), complying with ASTM A 53 unless otherwise noted.

D. Chain Link Mesh: Non-climbable/non-penetrable 9.5 mm (3/8-inch) diamond mesh; formed of 9 ga. (0.148 inch/3.76 mm dia.) steel wire, complying with ASTM A 491; with aluminized finish of 0.124 kg per sq. m (0.40 oz per sq. ft.) aluminum, complying with ASTM A 817; comply with CLFMA "Product Manual."

E. Chain Link Mesh: Non-climbable/non-penetrable 9.5 mm (3/8-inch) diamond mesh, formed of 9 ga. (0.148 inch/3.76 mm dia.) aluminum wire; mill finish, comply with ASTM B 211, alloy 6061-T94; comply with ASTM F 183, and with CLFMA "Product Manual."

F. Aluminum Gate Framing: ASTM B 221, alloy 6063-T6, mill finished aluminum; comply with ASTM B 429 for extruded structural pipe and tube, and with ASTM B 211 for bars, rods, and wire.

G. Welding Rods and Bare Electrodes: Provide type recommended by AWS specifications, for the metal and alloy being welded in each element of the fabrications.

H. Bolts and Fasteners: ASTM A 320, AISI Type 300-series stainless steel bolts and nuts. Where within reach of intruders working from attack-side of facilities, including working from inside sally ports, provide nonremovable bolt/nut units (not removable by use of commonly available hand tools). Provide stainless steel washers.

I. Concrete Inserts: Furnish anchorage units to be placed in concrete substrates, of hot-dip galvanized cast-iron/malleable-iron body, design/type as indicated; ASTM A 153 zinc coating, ASTM A 47 casting.

J. Setting/Anchoring Cement: Provide nonshrinking, nonstaining, hydraulic-controlled expansion-type cementitious compound; factory prepackaged for mixing with water at project for a pourable and trowellable mix, recommended by manufacturer for exterior exposure.

1. Acceptable Manufacturer: Provide product equivalent to “Super Por-Rock” by Minwax Construction Products Div.

K. Aluminum Extrusions: ASTM B 221, Alloy 6005, Temper T5 or T6; sizes, shapes, and wall thicknesses as indicated or, where not otherwise indicated, as required to achieve performances indicated.

L. Stainless Steel Tubing: ASTM A 269, AISI Type 304; sizes and wall thicknesses as indicated or, where not otherwise indicated, as required to achieve performances indicated.

M. Shop Primer Paint: Fabricator’s baked-on, lead-free, modified alkyd-base, ferrous-metal primer; which is compatible with finish system specified in Division 9 “Painting” or “Special Coatings” Section of these specifications; and which will provide long-term resistance to corrosion from external exposure, and form a firm undercoat for field-applied topcoats after prolonged construction-period exposures. Comply with performance requirements of FS TT-P-645, and with paint manufacturer’s instructions for baked-on primer coat material and application.

N. Shop Primer Paint: Organic, zinc-rich coating, with zinc-dust content not less than 80 percent by weight of non-volatile content; with vehicle base selected for compatibility with specified finish coating system. Comply with paint manufacturer’s instructions for surface pretreatment materials and methods, and for primer application.

5.3 FABRICATION

A. General: Fabricate perimeter gate facilities at the factory to the greatest extent possible, including interfacing, supporting, and anchorage provisions as required for installation. Fabricate to comply with indicated performance requirements. Disassemble only to the extent required for handling, delivery, and installation. Only Hydraulic Drive Systems should be specified for High Security Barricade and Gate Systems.

1. Fabricate units with member sizes, shapes, and spacings as shown, and with overall dimensions of each unit as shown.
2. Ease exposed edges of fabricated metal elements to approximately 0.8 mm (1/32-inch) radius, prior to finishing.
3. Avoid the use of bolts and screws exposed and accessible from the exterior (attack side) of fabricated units. Where unavoidable, provide no removable (with ordinary hand tools) type fasteners in the assembly.
4. Provide fabricated hardware and devices for assembly and installation of each gate facility, as indicated and required for performances.
5. Provide matching padlock eyes for each (closed) gate, located on inside (safe side) of fence except where indicated as exterior.
6. Provide lifting points for maintenance.
7. Wheels must be designed to withstand dead/live load.
8. Gate Control: Provide fabricated perimeter gates that are capable of being controlled remotely from within the CAC guard booth with an override control from MSG post 1.
9. Provide equipment control station at guard booth location with audible annunciator, which is automatically activated when barrier remains in retracted position in excess of adjustable time period, with adjustment capability up to 60 seconds. Equipment control station at Post 1 location with signal light , activated by operation of annunciator signal at gatehouse location; provide reset, which can also be used deactivate signal at gatehouse.
10. Provide gate and gate operator system capable of closing within 12 seconds, in case of an emergency
11. Ice Melting: Provide in-ground ice/snow melting capability in the sallyport and sidewalks surrounding the CACs when located in a heavy snow/ice environment.
12. Signal Light: Provide signal light to indicate barrier’s status on both sides. The signal light must be synchronized with the wedge barrier signal light.
13. Heating and Cooling System: Provide heating and cooling system per manufacturers’ recommendations.
14. Safety; Provide safety for gates, such as tamper switch, emergency stop switch, electromagnetic latch, auxiliary limit switch and safety suppression loop system
15. Manual Operation; Provide gate operating system with capability of disengaging the drive mechanism without the use of tools, so that the gate can be manually

operated. The release mechanism must not be accessible from the threat side of the gate.

16. Packaging: Provide export packaging as recommended by manufacturers with options.

B. Fabricate vehicular gate panels at each location, for the indicated manner of support in a sliding operation; with motorized gate operator unit sized for the weight and size of gate, in accordance with operator manufacturer's recommendation, for a closing/opening speed of 21.2 m.p.m. (70 f.p.m.); fabricate as follows:

1. Fabricate gate panels with frames of structural steel shapes; and provide steel picket size, shape, spacing, and material to match ornamental metal security fence. Weld joints all around to develop full-member-strengths; grind smooth.
2. Fabricate gate panels with frames of high strength steel shapes/tubes (as shown), and with pickets of high strength tubes. Weld joints all around to develop full-member-strengths; grind smooth.
3. Fabricate gate panels with welded frames of high strength steel shapes/tubes (as shown), with intermediate structural bracing members and diagonal tension bars. Cover panels on exterior (attack side) with steel chain link mesh, stretched and attached to frame in the manner indicated.
4. Fabricate gate panels with welded frames of extruded aluminum gate framing members (as shown), including intermediate bracing members and diagonal tension bars. Cover panels on exterior (attack side) with aluminum chain link mesh, stretched and attached to frame in the manner indicated.

C. Fabricate pedestrian swing-gate panels to match vehicular gate panels at each entrance location, except as otherwise indicated.

D. Fabricate active roadway barriers for installation as shown, flush with road surface when retracted; and for support/anchorage to concrete substructure as shown. Fabricate barriers to comply with previously-issued current approval documentation by DOS, including SD-STD-02.01 "Specification for Vehicle Crash Test of Perimeter Barriers and Gates." Required performance is for a test rating of K12; that is, a 6818 kg (15,000 lb.) test vehicle, traveling at 50 mph (83.3 km/hr) must be stopped, but within 900 mm (3 ft) allowable penetration beyond line of barrier contact. Provide barrier type recognized as a "Pop-up Wedge" system; capable, in width of operation, of obstructing vehicular traffic in a 4.5 m (15 ft.) wide traffic lane. Include the following:

1. Provide signal light to indicate barrier status (activated or retracted) to approaching vehicle driver.
2. Provide power-operated barrier activation equipment, which is capable of fully activating the barrier in 4 seconds under normal operating conditions, and which is capable of fully activating the barrier in 0.75 seconds under emergency conditions. Provide primary activation push button control station located in

guard booth at gate, and overriding activation control station located at Marine Security Guard (MSG) booth in Embassy Office Building (EOB). Operation of the emergency activation at the gate requires a reset of the control system in order to retract the barrier; and that is possible only at the MSG booth in the EOB. Provide barrier position indicator, and power indicator pilot light, at both control station locations.

3. Provide 24 VDC control circuitry, of the required cycles per min. rating (depends upon available power source). Provide system which retains barrier in current position when there is a power failure. Provide a system for manual operation of barrier when there is a power failure.
4. Barrier pit drainage may need a sump pump at certain locations; which should be specified as work of other Sections.
5. Equip control station at guard booth location with audible annunciator, which is automatically activated when barrier remains in retracted position in excess of adjustable time period, with adjustment capability up to 60 seconds. Equip control station at MSG booth location with signal light, activated by operation of annunciator signal at gatehouse location; provide reset, which can also be used to deactivate signal at gatehouse location.
6. Provide cooling /heating unit for the hydraulic fluid of the barrier operating system.
7. Provide disconnect switch.
8. Provide limit switch (up/down).
9. Provide safety for gates, such as tamper switch, emergency stop switch, electromagnetic switch and safety loop suppression system.
10. Provide safety cover that closes the opening when barrier is in the up position so that a kid or an adult doesn't crawl into the barrier as applicable.
11. Only Hydraulic Drive Systems shall be used for High Security Barricade and Gate Systems
12. Provide export packaging as recommended by manufacturers with options.

E. Fabricate structural steel bollard elements of the work, as shown for assembly in place at project site. Provide posts of steel pipe, cut to 2.1 m (7 ft) lengths, drilled-and-topped for field assembly with rails. Fabricate structural steel rail units of shapes and weights shown or, if not otherwise indicated, provide 25.4 cm x 6.96 cm (10-inch) steel channels weighing 9 kg (29 lbs) per ft. Fabricate turns in bollard-rail system as shown by prefabricated, full-strength welded, angular bends in rail system. Where continuous rail runs are shown too long for convenience of handling/shipping rails as one-piece units, provide splice plates of 16 mm (5/8-inch) thick steel plate, 40.64 cm (16-inch) long by width-of-rail-face less 12.7 mm (1/2-inch), or 24 cm (9.5 inches) wide if not otherwise indicated. Drill and tap splice plates, each for total of 16, ¾-inch (19 mm) diameter bolts. Drill matching bolt holes in rails at 22.2 mm (7/8-inch) diameter (1/8-inch field erection tolerance) for assembly with bollard posts and splice plates. Except as otherwise indicated, fabricate bollard-and-rail assemblies with rail positioned on attack side at each exposure; with top of pipe (bollard) extending 12.7 cm (6 inches) above top of rail, which is then 76 cm (30 inches) above foundation and grade.

1. After cleaning and prime-coat painting of bollard pipe units (as specified herein), apply a synthetic rubber, corrosion-resistant, shrink sleeve. Provide 90-mil (2.3 mm) minimum thickness sleeve, extending 23 cm (9 inches) above and 9 inches below line of concrete foundation top. Heat-shrink sleeve in place on pipe, in accordance with manufacturer's instructions.

F. Fabricate turnstile units completely at the factory, ready for assembly and erection/installation at the project site as shown. Provide for interfaces with other work, all around, as indicated. Except as otherwise indicated, provide manufacturer's standard, full height, fully restricted flow (high-security) type units. Provide units of dimensions shown, with one-way rotation/direction-of-traffic-flow-pattern as indicated, and with provisions for anchorage and support from substrates as indicated. Except as otherwise indicated, provide units which allow passage of a single person, with each 120 degree minimum, 240 degree maximum, turn of the rotating cage; with three arms spaced equally at 120 degrees. Provide sidewall enclosures spaced equally on opposite sides, each closing off not less than 105 degrees of the circular rotation path. Provide the following features, capabilities and accessories:

1. Provide manufacturer's standard inside height of unit (walk-thru overhead clearance), but not less than 2 m (79 inches). Provide manufacturer's standard inside-of-drum-enclosure diameter as follows (plus-or-minus 3 percent):

    a. Approximately 1.5 m (60-inch) diameter.
    b. Approximately 2.44 m (96-inch) diameter.

2. Provide duplex type turnstile units, with drums and rotors nested together by 75 to 80 percent of drum enclosure radius. Provide a fixed-cage enclosure for the central overlapping rotor travel area, designed to reduce hazards and maintain full security.
3. Provide full-strength security locking mechanisms, to stop and hold rotor(s) in fixed position at any 60-degree interval in its rotation; center locking points on centerline of sidewall enclosures. Provide power-operated, quick-acting locking mechanisms.

    a. Provide framed opening of size indicated, matching special security window shown in adjoining guard booth; located at center-line of sidewall enclosure of "entering" turnstile unit.

4. Fabricate turnstile rotating elements of the following primary materials and finishes (arms and columns):

    a. Stainless steel tubing, with No. 4 directional polish.

b. Extruded aluminum, with hard coat color-anodized finish, of color selected by Government; comply with NAAMM AA-M12C22A41/A44, Class I, 0.7 mil (0.018 mm) thickness, for coating.

5. Steel bar stock or high-strength tubular steel, properly cleaned and primed in accordance with requirements of this section, and finished as follows in International "safety yellow" except as otherwise indicated:

   a. Fabricator's standard powdered polyurethane or polyester, applied electro statically and thermally fused to metal surfaces, 3.0 mil (0.0762 mm) minimum dry film thickness.
   b. Fabricator's standard 2.0 mil (0.051 mm) minimum dry film thickness of silicone alkyd enamel, applied with heat-lamp-assisted drying.

6. Fabricate turnstile enclosure elements (cage or drum work) of the following primary materials and finishes:

   a. Stainless steel tubing, with No. 4 directional polish.
   b. Extruded aluminum, with hard coat color anodized finish of color selected by Government; comply with NAAMM AA-M12C22A31, Class II, 0.4 mil (0.010 mm) thickness, for coating.

7. Steel bar stock or high-strength tubular steel, properly cleaned and primed in accordance with requirements of this section, and finished as follows:

   a. Match finish in color and quality, as selected/specified for ornamental metal security fences; see Section 02833, "Ornamental Metal Security Fences."
   b. Fabricator's standard powdered polyurethane or polyester, applied electro statically and thermally fused to metal surfaces, 2.0 mil (0.051 mm) minimum dry film thickness; color selected by Government.
   c. Fabricator's standard 2.0 mil (0.051 mm) minimum dry film thickness of silicone alkyd enamel, applied with heat-lamp-assisted drying, color selected by Government.

8. Shop-Applied Painting: For nonshop-finished ferrous metal work of this section, comply with applicable provisions and recommendations of NAAMM Metal Finishes Manual, and the following:

   a. Prepare ferrous metal surfaces, which are not specified with other protective shop coatings, by cleaning in compliance with SSPC-SP6 "Commercial Blast Cleaning."
   b. Apply shop primer paint coat in accordance with paint manufacturer's recommendations for application and baking.

9. On steel-pipe posts of bollard system (after epoxy-based zinc-rich prime coat has been applied outside and inside of pipe), apply three external over-coats of air-

drying epoxy-polyamide resin high-performance special coating, of type recommended by paint manufacturer for exterior exposure. Provide total coating thickness of not less 6 mils (0.15 mm). Provide color (all three overcoats) as selected by Government.

PART 6 - EXECUTION

6.1 EXAMINATION, COORDINATION, PREPARATION

A. General: Examine substrate work, being prepared as work of other sections, for the anchorage and support of perimeter gate facilities of this section. Deliver anchorage inserts, sleeves, and other elements to be cast in concrete work, prior to time scheduled for placement of concrete. Furnish instructions, setting diagrams, templates, and/or other information for elements to be installed as work of other sections. Set posts, frames and similar elements plumb, level and true to line and location; and support adequately during placement of concrete.

B. Examine prefabricated units, and preparations made and to be made as work of other sections, and confirm that interfaces and support of work of this section will achieve performances and align within installation tolerances.

C. Coordinate installation of gate facilities with installation of related work, to ensure optimum sequencing of interfaces.

6.2 INSTALLATION

A. Comply with fabricator's instructions for the handling, protection, assembly, installation, anchorage, and other required interface connections of gate facilities with other work. Set level and plumb, true to line and location. Anchor to develop full-strength resistances against attacks and forced-entry attempts.

B. Install exposed gate hardware, track, and devices with nonremovable fasteners, where exposed to attack side. Assemble gate operating equipment and control system for smooth, secure gate movements, with ground-set items anchored in concrete supports. Comply with applicable installation provisions of ASTM F 1184.

C. Comply with manufacturer's instructions for the installation of roadway barrier units as shown; and for the mechanical/electrical interconnection of power and control elements. Install units flush with roadway surface, except as otherwise indicated.

D. Install hydraulic pump unit of barrier system in "Mechanical Equipment" room of gatehouse; and install oil-cooling coil unit outdoors at location indicated.

E. Where possible, assemble each set of rail-connected bollards, and place in final position, prior to the pouring of concrete foundations. Provide temporary support of each set, sufficiently strong to prevent dislocation of bollard system during concrete placement.

F. Bolt rails to bollard pipes and splice rail units together, with nonremovable bolts of sizes indicated. Extend bolts 76.2 mm (3 in.) into concrete grout of bollard pipes.

1. After concrete foundations have been completed, fill bollard pipes with concrete grout, providing a uniform shaped hemispheroid cap at the top of each bollard pipe, uniformly trowelled to a smooth finish, and projecting 76.2 mm (3 in.) above end of pipe.

G. Assemble and install each pedestrian turnstile unit in compliance with manufacturer's instructions and shop drawings. Provide secure, nonremovable anchorages, and maintenance/access configurations. Install electro/mechanical operating-and-control devices, and connect with control station locations as indicated. Provide interfaces as indicated, with walls/roofs/ceilings of gatehouse/guard booth construction; also with vehicle gates and/or perimeter security fence, and with walkways/roadways/curbs at each gate location.

H. Lubricate each rotating unit, except where permanently lubricated-and-sealed rotor bearings are provided.

6.3 TESTING AND ADJUSTING

A. Test operate each gate facility operational unit through repeated cycles of operation; and demonstrate operation, controls, safety devices, signals, and other features to Project Director. Provide adjustments as requested to comply with requirements and intended cycles of use and operation.

6.4 CLEANING AND FINISHING

A. Clean exposed surfaces of gate facilities, including primed surfaces and finished surfaces, exercising care to avoid damage to finishes; touch up minor blemishes in finished surfaces.

B. Refer to "Painting" or "Special Coatings" section of these specifications for application of field-applied finish coatings over shop-applied primer coatings; not work of this section.

6.5 MANUFACTURER'S SERVICE

A. Services of a manufacturer's representative who is experienced in the installation, adjustment, and operation of the equipment supplied shall be available. The representative shall supervise the installation, adjustment, and testing of the equipment.

6.6 FIELD TRAINING

A. A field training course shall be provided for designated operating staff members. Training shall be provided for a total period of not less than 8 hours of normal working time and shall start after the system is functionally complete but prior to final acceptance tests. Field training shall cover all of the items contained in the operating and maintenance instructions.

END OF SECTION 02843

SECTION 03300 - CAST-IN-PLACE CONCRETE

PART 7 - GENERAL

7.1 SUMMARY

A. This Section specifies cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

B. Cast-in-place concrete includes the following:

1. Footings.
2. Foundation walls.
3. Slabs-on-grade.
4. Suspended slabs.
5. Concrete toppings.
6. Building frame members.
7. Building walls.
8. Equipment pads and bases.
9. Site perimeter walls, concrete filled bollards, and site structures.

7.2 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one of blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, or silica fume; subject to compliance with requirements.

7.3 SUBMITTALS

A. General: Submit the following according to Conditions of the Contract and Division 1 Specification Sections. Shop drawing review is only for conformance with the design concept of the project and compliance with the information given in the contract documents.

B. Product Data: For each type of manufactured material and product indicated.

C. Design Mixtures: For each concrete mixture. Include alternate mixtures designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.

1. Mix design shall indicate the weight of each ingredient of the mixture, aggregate graduation, slump, air content, water/ cement ratio, admixtures, and 7 and 28 day compressive strength test results of trial mixes or acceptable record of field results.

2. Indicate amounts of mix water to be withheld for later addition at Project site.

D. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures".

E. Formwork Shop Drawings: Prepared, signed and sealed by a professional engineer indicating fabrication and erection of forms of specific finished concrete surfaces. Show form construction including jointing, special form joints or reveals, location and pattern of form tie placement, and other items that affect exposed concrete visually. Show locations and detail construction joints for concrete work. Show locations of all embedded items. Drawings shall show all walls in elevation and in section.

1. Shoring and Reshoring: Indicate proposed schedule and sequence of stripping formwork, shoring removal, and installing and removing reshoring.

2. Review is for general applications and features only. Designing formwork and shoring sequence for structural stability and efficiency is Contractor's responsibility.

F. Welding Certificates: Copies of certificates for welding procedures and personnel.

G. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:

1. Aggregates Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.

H. Steel Reinforcement: From a qualified testing agency, indicating compliance with requirements.

I. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements, including where applicable, compatibility with other subsequent materials and finishes:

1. Cementitious materials.
2. Admixtures.
3. Form materials and form-release agents.
4. Steel reinforcement and accessories.
5. Fiber reinforcement.
6. Water stops.
7. Curing and sealing compounds.
8. Floor and slab treatments.
9. Bonding agents.
10. Adhesives.

11. Vapor retarders.
12. Semi rigid joint filler.
13. Epoxy joint filler.
14. Joint-filler strips.
15. Repair materials.

J. Minutes of preinstallation conference.

7.4 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed concrete Work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Professional Engineer Qualifications: A professional engineer who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for formwork and shoring and reshoring installations that are similar to those indicated for this Project in material, design, and extent.

C. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.

D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.

E. Welding: Qualify procedures and personnel according to AWS D1.4, "Structural Welding Code--Reinforcing Steel."

F. Codes and Standards: Comply with provisions of the latest editions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified.

1. American Concrete Institute (ACI) 301-99, “Specifications for Structural Concrete for Buildings.”
2. ACI 117-90, “Specification for Tolerances for Concrete Construction and Materials”.
3. ACI 211.1-91, “Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.”
4. ACI 304R-00, “Guide for Measuring, Mixing, Transporting, and Placing Concrete.”
5. ACI 305R-99, “Hot Weather Concrete.”
6. ACI 306R-88, “Cold Weather Concrete.”
7. ACI 309R-96, “Guide for Consolidation of Concrete.”
8. ACI 318M-02, “Building Code Requirements for Reinforced Concrete.”

9. ACI 347-01, "Guide to Formwork for Concrete."
10. Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice, 2001, 27th Edition".

G. Preinstallation Conference: Conduct conference at the Project site to comply with requirements of Division 1 Section "Project Meetings" Comment #31 and the following:

1. At least 35 days prior to submitting design mixes, conduct a meeting to review detailed requirements for preparing concrete design mixes and to determine procedures for satisfactory concrete operations. Review requirements for submittals, status of coordinating work, and availability of materials. Establish preliminary work progress schedule and procedures for materials inspection, testing, and certifications. Require representatives of each entity directly concerned with cast-in-place concrete to attend conference, including, but not limited to, the following:

    a. Contractor's superintendent.
    b. Agency responsible for concrete design mixes.
    c. Agency responsible for field quality control.
    d. Ready-mix concrete producer.
    e. Primary admixture manufacturers.
    f. Concrete subcontractor.
    g. Formwork subcontractor.
    h. Steel reinforcing installer subcontractor.
    i. Quality Control Manager.
    j. Contracting Officer's Representative (COR).

H. Place concrete after the placement of all forms, reinforcement, inserts, sleeves, and other embedments have been inspected and approved by the Contractor's superintendent and the Quality Control Manager and reviewed by the COR.

I. Place concrete only under the supervision of the Contractor's superintendent and the Quality Control Manager.

J. The Contractor is responsible for the establishment of a quality control program to manage forming, reinforcement, production, delivery, placement, compaction, finishing, curing, protection and patching of all concrete. Comply with the requirements specified in Section 01401.

K. Provide the Quality Control Manager and the COR with access to the site or to the plant to facilitate inspection of the reinforcement. Submit a schedule, showing the beginning and the duration of the shop fabrication, in sufficient time to allow for the proper inspection.

L. Provide the Quality Control Manager and the COR, with access to the concrete plant to facilitate inspection of concrete. Notify the Quality Control Manager when production

of concrete is to commence and the plant location in sufficient time to allow for the proper inspection.

M. Inspection and testing will be performed by the Quality Control Manager in accordance with the requirements of this Section and Section 01401, Contractor's Quality Control.

N. Provide free access to the Work and cooperate with the appointed Quality Control Manager. Notify the QCM prior to the start of concrete work, at least 36 hours in advance. Provide a covered storage box on-site for the temporary storage of concrete cylinders.

O. Tests of the proposed cement, aggregates and other concrete ingredients will be performed to ensure conformance with the specified requirements.

P. The Quality Control Manager will make the concrete compressive test specimens and perform all the tests specified in this Section and Section 01401.

Q. The Quality Control Manager shall be the only entity authorized to allow the addition of any water to a concrete mix after batching.

R. The Quality Control Manger shall have the authority to reject concrete prior to or during placement for reasons of non-compliance with the Contract Documents. Rejected concrete will be promptly removed and replaced at no cost to the Owner.

7.5 DELIVERY, STORAGE, AND HANDLING

A. Store cement, aggregate, admixture, water, embedded items and reinforcing in a manner to prevent deterioration or intrusion of any foreign matter. Do not use damaged or deteriorated materials.

B. Deliver, store, and handle steel reinforcement to prevent bending and damage.

PART 8 - PRODUCTS

8.1 FORM MATERIALS

A. Forms for Exposed Finish Concrete: Plywood, metal-framed plywood faced, or other acceptable panel-type materials to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints or as shown on drawings.

B. Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or another acceptable material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Chamfer Strips: Wood, metal, PVC or rubber strips, 20 mm by 20 mm.

D. Form Release Agent: Provide commercially formulated form release agent with a maximum of 350 mg/l volatile organic compounds (VOCs) that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

E. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off metal form ties designed to prevent form deflection and to prevent spalling of concrete upon removal. Provide units that will leave no metal closer than 40 mm to the plane of the exposed concrete surface.

1. Provide ties that, when removed, will leave holes not larger than 25 mm in diameter in the concrete surface.

8.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 420 (Grade 60), deformed. Reinforcing as indicated on the structural drawings to comply with the special ductility requirements of ACI-318M, paragraph 21.2.5, parts (a) and (b).

B. Low-Alloy-Steel Reinforcing Bars: ASTM A 706/A 706M, deformed.

C. Plain-Steel Wire: ASTM A 82, as drawn.

D. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.

8.3 REINFORCEMENT ACCESSORIES

A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete, and as follows:

1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected or CRSI Class 2 stainless-steel bar supports.
2. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.

B. Joint Dowel Bars: Plain-Steel bars, ASTM A615M, Grade 420, cut bars true to length with ends square and free of burs.

C. Mechanical Splices and Connections: As indicated on Drawings.

8.4 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150; Type V (High Sulfate Resistance) shall be used for all foundations and below grade concrete. Type II concrete shall be used for all other work.

1. Use one brand of cement throughout Project unless otherwise acceptable to Project Director.

B. Fly Ash: ASTM C 618, Class F.

C. Ground Granulated Blast-Furnace Slag (GGBF): ASTM C 989, Grade 100 or 120.

D. Normal-Weight Aggregate: ASTM C 33, uniformly graded, and as follows:

1. Coarse aggregate size for concrete in walls, columns, beams, and structural slabs shall not exceed 20 mm.
2. Coarse Aggregates: (a) General Use: 25 mm to 4.75 mm; (b) Walls, Columns, Beams, and Structural Slabs: 20 mm to 4.75 mm; (c) Tight Placement: 12.5 mm to 4.75 mm.
3. Fine Aggregates: Fineness modulus shall not be less than 2.3 nor more than 3.1.
4. Combined Aggregate Gradation: Well graded from coarsest to finest with not more than 18 percent and not less than 8 percent retained on an individual sieve, except that less than 8 percent may be retained on coarsest sieve, on the No. 50 (0.300 mm) sieve, and the No. 100 (0.150 mm) sieve.
5. Materials that contain particles that will discolor the surface shall not be used for any exposed concrete.
6. Provide aggregates from a single source for exposed concrete.
7. Do not use aggregates containing chloride ions in excess to the requirements of ACI for concrete construction in corrosive environments.

E. Lightweight Aggregate: ASTM C 330.

1. Nominal Maximum Aggregate Size: 10 mm.

F. Water: Potable and complying with ASTM C 94.

8.5 ADMIXTURES

A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and to be compatible with other admixtures and cementitious materials. Do not use admixtures containing calcium chloride. Accelerating admixtures shall not be used unless approved by the Quality Control Manager.

B. Air-Entraining Admixture: ASTM C 260, Type C.

C. Water-Reducing Admixture: ASTM C 494, Type A.

D. Retarding Admixture: ASTM C 494, Type B.

E. Accelerating (Non-Corrosive) Admixture: ASTM C 494, Type C.

F. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.

G. Water-Reducing and Accelerating Admixture: ASTM C 494, Type E.

H. High Range, Water-Reducing Admixture (Superplasticizer): ASTM C 494, Type F.

I. High Range, Water-Reducing and Retarding Admixture: ASTM C 494, Type G.

J. Corrosion-Inhibiting Admixture: Commercially formulated, calcium nitrite, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

a. DCI or DCI-S; W. R. Grace & Co., Construction Products Div.
b. Rheocrete CNI; Master Builders, Inc.

8.6 FIBER REINFORCEMENT

A. Synthetic Fiber: Fibrillated or monofilament polypropylene fibers engineered and designed for use in concrete, complying with ASTM C 1116, Type III, 12 to 25 mm long.

B. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. Fibrillated Fibers:

a. Fibrasol F; Axim Concrete Technologies.
b. Fibermesh; Fibermesh, Div. of Synthetic Industries.
c. Forta; Forta Corporation.
d. Grace Fibers; W. R. Grace & Co., Construction Products Div.

2. Monofilament Fibers:

a. Fibrasol IIP; Axim Concrete Technologies.
b. Fiberstrand 100; Euclid Chemical Co.
c. Fibermix Stealth; Fibermesh, Div. of Synthetic Industries.
d. Forta Mono; Forta Corporation.
e. Grace MicroFiber; W. R. Grace & Co., Construction Products Div.

8.7 WATERSTOPS

A. Flexible Rubber Waterstops: CE CRD-C 513, for embedding in concrete to prevent passage of fluids through joints. Factory fabricated corners, intersections, and directional changes.

1. Profile: Flat, dumbbell with center bulb.
2. Dimensions: 150 mm by 10 mm thick.

B. Flexible PVC Waterstops: CE CRD-C 572, for embedding in concrete to prevent passage of fluids through joints. Factory fabricated corners, intersections, and directional changes.

1. Profile: Flat, dumbbell with center bulb.
2. Dimensions: 150 mm by 10 mm thick.

C. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Rubber Waterstops:

    a. Greenstreak.
    b. Progress Unlimited Inc.
    c. Westec Barrier Technologies; Div. of Western Textile Products, Inc.

2. PVC Waterstops:

    a. Greenstreak.
    b. Meadows: W. R. Meadows, Inc.
    c. Murphy: Paul Murphy Plastics Co.
    d. Progress Unlimited Inc.
    e. Vinylex Corporation.
    f. Sika Corporation.

D. Self-Expanding Strip Waterstops: Manufactured rectangular or trapezoidal strip, sodium bentonite or other hydrophylic material for adhesive bonding to concrete.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

    a. Volclay Waterstop-RX; Colloid Environmental Technologies Co.
    b. Conseal CS-231; Concrete Sealants Inc.
    c. Swellseal Joint; De Neef Construction Chemicals (U.S.) Inc.
    d. Hydrotite; Greenstreak.

8.8 VAPOR RETARDERS

A. Vapor Retarder: Polyethylene sheet, ASTM D 4397, not less than 0.26 mm (10 mils) thick.

B. Granular Fill: Clean mixture of crushed stone or crushed or uncrushed gravel; ASTM D 448, Size 57, with 100 percent passing a 38-mm sieve and 0 to 5 percent passing a 2.36-mm (No. 8) sieve.

8.9 FLOOR AND SLAB TREATMENTS

A. Slip-Resistive Aggregate Finish: Factory-graded, packaged, rustproof, non-glazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery with emery aggregate containing not less than 50 percent aluminum oxide and not less than 25 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.

B. Penetrating Liquid Floor Treatment (Liquid Densifer/Sealer): For warehouses and garages. Chemically reactive, waterborne solution of inorganic silicate or siliconate materials and proprietary components; odorless; colorless; that penetrates, hardens, and densifies concrete surfaces, increases abrasion resistance, and provides a low sheen surface that is easy to clean and reduces the problem of tire mark removal.

C. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. Penetrating Liquid Floor Treatment:

    a. Chemisil Plus; ChemMasters.
    b. “Ashford Formula”, Curecrete Chemical Co.
    c. “Euco Diamond Hard”, The Euclid Chemical Co.

8.10 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete and exposed concrete slab surfaces for temporary protection from rapid moisture loss.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 300 g/sq. m (9 oz./sq. yd.) dry.

C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

D. Water: Potable.

E. Clear, Solvent-Borne, Membrane-Forming Curing Compound: ASTM C 309, Type1, Class B.

F. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1 Class B.

G. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

H. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

I. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. Evaporation Retarder:

    a. Spray-Film; ChemMasters.
    b. Sure Film (J-74); Dayton Superior.
    c. Confilm; Degussa Construction Chemicals.
    d. Eucobar; Euclid Chemical Co.
    e. E-Con; L&M Construction Chemicals, Inc.

2. Clear, Solvent-Borne, Membrane-Forming Curing Compound:

    a. Spray-Cure Clear; ChemMasters.
    b. General Purpose Cure & Seal (J-20UV); Dayton Superior.
    c. MasterKure N-Seal-HS; Degussa Construction Chemicals
    d. Diamond Clear; Euclid Chemical Co.
    e. Dress & Seal 30; L&M Construction Chemicals, Inc.

3. Clear, Waterborne, Membrane-Forming Curing Compound:

    a. Safe Cure Clear; ChemMasters.
    b. Day-Chem Rez Cure (J-11-W); Dayton Superior.
    c. Kure-N-Seal W; Degussa Construction Chemicals.
    d. Diamond Clear VOX; Euclid Chemical Co.
    e. Dress & Seal WB 30; L&M Construction Chemicals, Inc.

4. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound:

    a. Spray-Cure & Seal 25; ChemMasters.
    b. Super Diamond Clear; Euclid Chemical Co.
    c. Lumiseal Plus; L&M Construction Chemicals, Inc.

5. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound:

a. Polyseal WB; ChemMasters.
b. Super Diamond Clear VOX; Euclid Chemical Co.
c. Lumiseal WB Plus; L&M Construction Chemicals, Inc..

8.11 RELATED MATERIALS

A. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

B. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of type, class, and grade to suit requirements.

C. Dovetail Anchor Slots: Hot-dip galvanized steel sheet, not less than 0.85 mm (22 gage) thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

D. Reglets: Fabricate reglets of not less than 0.55 mm (26 gage) thick galvanized steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.

E. Epoxy Joint Filler: For control and construction joints of slab-on-grade in warehouses, a two component, 100 percent solids, low-range tensile strength semi-rigid epoxy with a minimum shore D hardness 50 (ASTM D676) and elongation of 6 percent (ASTM D 2240). The epoxy joint filler shall be mixed and installed in strict accordance with the direction of manufacturer. The joint filler shall not be filled sooner than 90 days after slab placement.

F. Joint Sealant for Isolation Joint at Slab-on-Grade:

1. Eucolastic I (Urethane sealant): Use closed cell polyethylene backer rod.

8.12 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 3 mm and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 3 to 6 mm or coarse sand as recommended by underlayment manufacturer.

4. Compressive Strength: Not less than 30 MPa at 28 days when tested according to ASTM C 109/C 109M.

B. Repair Topping: Traffic-bearing, cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 6 mm.

1. Cement Binder: ASTM C 150, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 3 to 6 mm or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 40 MPa at 28 days when tested according to ASTM C 109/C 109M.

8.13 CONCRETE MIXES

A. Prepare design mixes for each type and strength of concrete determined by laboratory trial batch method as specified ACI 211.1, ACI 301 and ACI 318M. Use an independent testing agency acceptable to the Project Director for preparing and reporting proposed mix designs. Do not use the same testing agency for field quality control testing.

B. Submit written reports to the Project Director of each proposed mix prepared and sealed by a professional engineer for each class of concrete at least 15 days prior to start of Work. Do not begin concrete production until the Project Director has approved proposed mix designs.

C. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Limit use of fly ash and ground granulated blast furnace (GGBF) slag to not exceed 20 percent of cementitious content by weight.

D. Design mixes to provide normal weight concrete with properties as indicated herein unless indicated otherwise on the Structural Drawings.

1. Civil/Site and Perimeter Walls. Proportion normal-weight concrete mix as follows:

a. Compressive Strength (28 Days): 30 MPa minimum.
b. Maximum Slump: 125 mm.

2. Slab-on-Grade and Footings. Proportion normal-weight concrete mix as follows:

a. Compressive Strength (28 Days): 25 MPa minimum.

b. Maximum Slump: 125 mm.

3. Suspended Slabs and Building Frame Members: Proportion normal-weight concrete mix as follows:

   a. Maximum Slump: 125 mm.
   b. Maximum Slump for Concrete Containing High-Range, Water-Reducing Admixture: 200 mm after admixture is added to concrete with 50 mm to 75 mm slump.
   c. Compressive Strength (28 Days): 30 MPa minimum.

4. Footings and Foundations – 25 MPa

E. Water-Cementitious Materials Ratio: Provide concrete for following conditions with maximum water-cementitious materials (W/C) ratios as follows:

1. Unless noted otherwise: Maximum W/C = 0.50.
2. Maximum Water-Cementitious Materials Ratio: 0.45 for concrete subject moderate sulfate exposure (per ACI 318M Table 4.3.1) or required to have low water permeability or subject to freezing and thawing while moist.
3. Maximum Water-Cementitious Materials Ratio: 0.40 for concrete subject to severe or very severe sulfate exposure (per ACI 318M Table 4.3.1) or for corrosion protection of steel reinforcement in concrete exposed to chlorides from deicing chemicals, salt, saltwater, brackish water, seawater, or spray from these sources.

F. Limit water-soluble, chloride ion content in hardened concrete to 0.15 percent by weight of cement.

G. Synthetic Fiber: Uniformly disperse in concrete mix at manufacturer's recommended rate, but not less than 0.90 kg/m^3 (1.5 lb./cu. yd.).

H. Air Content: Use air-entraining admixtures in exterior exposed concrete unless otherwise indicated. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content of 6 percent with a tolerance of plus or minus 1½ percent.

1. Do not air entrain concrete for trowel finished interior floors and suspended slabs.
2. Do not allow entrapped air content to exceed 3 percent.
3. Concrete exposed to sulfates shall be air-entrained.

I. Admixtures: Use admixtures according to manufacturers written instructions.

1. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.
2. Use water-reducing and retarding admixtures when required by high temperatures, low humidity, or other adverse placement conditions.

3. Use high range water-reducing admixture in pumped concrete as required for pumpability and workability and concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
4. Use corrosion-inhibiting admixture in concrete mixes where indicated. Corrosion inhibiting admixture is to be added at the Project site.

8.14 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

8.15 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94, and furnish batch ticket information.

1. When air temperature is between 30 deg C and 32 deg C, reduce mixing and delivery time from 90 minutes to 75 minutes, and when air temperature is above 32 deg C, reduce mixing and delivery time to 60 minutes.
2. Hand-Mixed Concrete: Hand mixed concrete is not allowed.

PART 9 - EXECUTION

9.1 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301 and as shown on formwork shop drawings which have been reviewed by the Project Director, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:

1. Class A, 3 mm.
2. Class B, 6 mm.
3. Class C, 13 mm.
4. Class D, 25 mm.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete

surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.

1. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Chamfer exterior corners and edges of permanently exposed concrete.

I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

9.2 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that are attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor bolts, accurately located, to elevations required.
2. Install reglets to receive top edge of foundation sheet waterproofing and to receive through-wall flashing in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
3. Install dovetail anchor slots in concrete structures as indicated.
4. Install FE/BR window and door embeds.
5. Install blast resistant window embeds.

9.3 REMOVING AND REUSING FORMS

A. General: Formwork, for sides of beams, walls, columns, and similar parts of the Work, that does not support weight of concrete may be removed after cumulatively curing at not less than 10 deg C for 24 hours after placing concrete provided concrete is hard enough to not be damaged by form-removal operations and provided curing and protection operations are maintained.

B. Leave formwork for beam soffits, joists, slabs, and other structural element, that supports weight of concrete in place until concrete has achieved the following:

1. At least 70 percent of 28-day design compressive strength, but not less than four days.
2. Determine compressive strength of in-place concrete by testing representative field- or laboratory-cured test specimens according to ACI 301.
3. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

C. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

D. When forms are reused, clean surfaces, remove fins and latience, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by COR.

9.4 SHORES AND RESHORES

A. Comply with ACI 318M, ACI 301, and recommendations in ACI 347R for design, installation, and removal of shoring and reshoring.

B. In multistory construction, extend shoring or reshoring over a sufficient number of stories to distribute loads in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members without sufficient steel reinforcement.

C. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

9.5 VAPOR RETARDERS

A. Vapor Retarder: Place, protect, and repair vapor-retarder sheets according to ASTM E 1643 and manufacturer's written instructions.

1. Place vapor retarder sheeting in position with longest dimension parallel the direction of pour.
2. Lap joints: 150 mm and seal with manufacturer's recommended mastic or pressure-sensitive tape.

9.6 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Install in accordance with steel reinforcement placement shop drawings that have been reviewed by the Project Director.

C. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.

D. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover as approved by the Project Director. Do not tack weld crossing reinforcing bars.

1. Shop- or field-weld reinforcement according to AWS D1.4, where indicated.
2. Welding of reinforcing bars is not permitted unless indicated on the structural drawings.

E. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

F. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Secure overlaps with wire.

9.7 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by COR. Indicate locations and show details on shop drawing submittals.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.

2. Form from preformed galvanized steel, plastic keyway-section forms, or bulkhead forms with keys, unless otherwise indicated. Embed keys at least 40 mm into concrete.
3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
5. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Contraction (Control) Joints in Slabs-on Grade: Construct contraction joints in slabs-on-grade to form panels of patterns as shown. Use saw cuts 3 mm wide by one-fourth of the slab depth or inserts 6 mm wide by one-fourth of slab depth, unless otherwise indicated.

1. Form contraction joints by inserting premolded plastic, hardboard, or fiberboard strip into fresh concrete until top surface of strip is flush with slab surface. Tool slab edges round on each side of insert. After concrete has cured, remove inserts and clean groove of loose debris.
2. Contraction joints in unexposed floor slabs may be formed by saw cuts as soon as possible after slab finishing as may be safely done without dislodging aggregate.
3. If joint pattern is not shown, provide joints not exceeding 4.5 meters in either direction and located to be conform to bay spacing wherever possible (at column centerlines, half bays, third bays).
4. Discontinue reinforcing through joint only as shown on the drawings.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.
2. Terminate full-width joint-filler strips not less than 12 mm or more than 25 mm below finished concrete surface where joint sealants, specified in Division 7 Section "Joint Sealants," are indicated.
3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Dowel Joints: Install dowel sleeves and dowels or dowel bar and support assemblies at joints where indicated.

1. Use dowel sleeves or lubricate or asphalt-coat one-half of dowel length to prevent concrete bonding to one side of joint, unless indicated otherwise on the drawings.

9.8 WATERSTOPS

A. Flexible Waterstops: Install in construction joints as indicated to form a continuous diaphragm. Install in longest lengths practicable. Support and protect exposed waterstops during progress of Work. Field-fabricate joints in waterstops according to manufacturer's written instructions.

B. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, bonding or mechanically fastening and firmly pressing into place. Install in longest lengths practicable.

9.9 CONCRETE PLACEMENT

A. General: Comply with ACI 304, " Guide for Measuring, Mixing, Transporting, and Placing Concrete," and as specified.

B. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

C. Do not add water to concrete during delivery, at Project site, or during placement, unless approved by Project Director.

D. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation and at such a rate of placement not to exceed the maximum shown on the formwork shop drawings.

E. Deposit concrete in forms in horizontal layers no deeper than 600 mm and in a manner to avoid inclined construction joints. Place each layer while preceding layer is still plastic, to avoid cold joints.

1. Consolidate placed concrete with mechanical vibrating equipment supplemented by hand spading, rodding, or tamping. Use equipment and procedures for consolidating concrete recommended by ACI 309R.
2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the vibrator. Place vibrators to rapidly penetrate placed layer and at least 150 mm into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix constituents to segregate.

F. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
2. Maintain reinforcement in position on chairs during concrete placement.
3. Screed slab surfaces with a straightedge and strike off to correct elevations.
4. Slope surfaces uniformly to drains where required.
5. Begin initial floating using bull floats or derbies to form a uniform and open-textured surface plane, free of humps or hollows, before excess moisture or bleed water appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

G. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When air temperature has fallen to or is expected to fall below 4 deg C, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 10 deg C and not more than 27 deg C at point of placement.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified and approved in mix designs.

H. Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows, when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 32 deg C at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.
4. Concrete placement shall not be started if the temperature is 40 deg. C and rising or until it is 43 deg. C and falling. All concrete placement shall be completed at ambient air temperature of less than 45 deg. C.

9.10 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defective areas repaired and patched. Remove fins and other projections exceeding ACI 347R limits for class of surface specified.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and

patch tie holes and defective areas. Remove fins and other projections exceeding 3 mm in height.

1. Apply to concrete surfaces exposed to public view or to be covered with a coating or covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, or painting.

C. Rubbed Finish: Apply the following to smooth-formed finished concrete:

1. Smooth-Rubbed Finish: No later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white Portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.

D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

9.11 FINISHING FLOORS AND SLABS

A. General: Comply with recommendations in ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces. Specified Overall Values (SOV) for flatness and Minimum Local Values (MLV) for both F_F (flatness) and F_L (levelness) are measured according to ASTM E 1155, Standard Test Method for Determining Floor Flatness and Levelness Using the F-Number System. F_L (levelness) shall be calculated for suspended slabs before slab shoring is removed.

B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. to a tolerance of Specified Overall Value (SOV) F_F18 / F_L15 and Minimum Local Value (MLV) F_F13 / F_L10. Use stiff brushes, brooms, or rakes.

1. Apply scratch finish to surfaces indicated and to surfaces to receive concrete floor topping or mortar setting beds for ceramic or quarry tile, portland cement terrazzo, and other bonded cementitious floor finishes and where indicated.

2. Finish surface to a tolerance of Specified Overall Value (SOV) F_F18 / F_L15 and Minimum Local Value (MLV) F_F13 / F_L10.

C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture. Grind smooth any surface defects that would telegraph through applied floor covering system.

1. Apply float finish to surfaces indicated on the Architectural Drawings, to surfaces to receive trowel finish, and to floor and slab surfaces to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.

2. Finish surface to a tolerance of Specified Overall Value (SOV) F_F20 / F_L18 and Minimum Local Value (MLV) F_F15 / F_L12.

D. Trowel Finish: After applying float finish, apply first trowel finish and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to surfaces indicated on Architectural Drawings and to floor and slab surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film-finish coating system.

2. Finish surface to a tolerance of Specified Overall Value (SOV) F_F25 / F_L20 and Minimum Local Value (MLV) F_F17 / F_L15.

E. Trowel and Fine-Broom Finish: Apply a partial trowel finish, stopping after second troweling, to surfaces indicated on Architectural Drawings and to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set method. Immediately after second troweling, and when concrete is still plastic, slightly scarify surface with a fine broom.

F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated on Architectural Drawings.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Project Director before application.

G. Slip-Resistive Aggregate Finish: Before final floating, apply slip-resistive aggregate finish where indicated on Architectural Drawings and to concrete stair treads, platforms, and ramps. Apply according to manufacturer's written instructions and as follows:

1. Uniformly spread 1.2 kg/m^2 (0.25 lbs/ft^2) of dampened slip-resistive aggregate over surface in one or two applications. Tamp aggregate flush with surface, but do not force below surface.
2. After broadcasting and tamping, apply float finish.
3. After curing, lightly work surface with a steel wire brush or an abrasive stone, and water to expose slip-resistive aggregate.

9.12 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates of manufacturer furnishing machines and equipment.

D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel-finish concrete surfaces.

9.13 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with recommendations in ACI 305R for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 1 kg/m^2 x hour (0.20 lbs./$ft.^2$ x hour) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

    a. Water.
    b. Continuous water-fog spray.
    c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 300-mm lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 300 mm, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

    a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
    b. Cure concrete surfaces to receive floor coverings by moisture cure or with either a moisture-retaining cover or a curing compound that the manufacturer recommends for use with floor coverings.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated on Architectural Drawings in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

    a. Water.
    b. Continuous water-fog spray.
    c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 300-mm lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides

and ends lapped at least 300 mm, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

a. Moisture cure or use moisture-retaining covers to cure concrete.

3. Curing Compound: Apply curing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours and after surface water sheen has disappeared. Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.
5. Hot-Weather Curing: Cure concrete according to recommendations in ACI 305R and as follows, when hot-weather conditions exist:

a. When ambient air temperature is expected to be greater or equal to 36 deg. C in the following seven days after flatwork is poured it shall be moist-cured for a minimum of seven days.

9.14 LIQUID FLOOR TREATMENTS

A. Penetrating Liquid Floor Treatment: Prepare, apply, and finish penetrating liquid floor treatment according to manufacturer's written instructions.

1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants and complete surface repairs.
2. Do not apply to concrete that is less than 14 days old.
3. Apply liquid until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing. Rinse with water; remove excess material until surface is dry. Apply a second coat in a similar manner if surface is rough or porous. Comply with manufacturer’s written instructions.

B. Sealing Coat: Uniformly apply a continuous sealing coat of curing and sealing compound to hardened concrete by power spray or roller according to manufacturer's written instructions.

9.15 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least six months. Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Install semi-rigid epoxy joint filler the full depth in saw-cut joints and at least 50 mm deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

9.16 CONCRETE SURFACE REPAIRS

A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removing forms, when acceptable to the Project Director. Remove and replace concrete that cannot be repaired and patched to the Project Directors approval.

B. Patching Mortar: Mix dry-pack mortar, consisting of one part Portland cement to 2½ parts fine aggregate passing a 1.2 mm (No. 16) sieve, using only enough water as required for handling and placing.

C. Repairing Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of the Project Director. Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins and other projections on the surface, and stains and other discoloration that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 12 mm in any dimension in solid concrete but not less than 25 mm in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cork cone plugs secured in place with bonding agent.
2. Repair defects on surfaces exposed to view by blending white Portland cement and standard Portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by COR.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.25 mm wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete. Proprietary underlayment compounds may be used when acceptable to the COR.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment when acceptable to the COR. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping when acceptable to the COR. Cut out low areas to ensure a minimum repair topping depth of 6 mm to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 25 mm or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least 20 mm clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mix as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 25 mm or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to COR approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to acceptance of the COR.

9.17 QUALITY CONTROL TESTING DURING CONSTRUCTION

A. General: The Contractor shall employ a qualified independent testing and inspecting agency, approved by the COR, to sample materials, perform tests, and submit test reports according to the requirements specified in this Article.

B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least one composite sample for each 50 m^3 or fraction thereof of each concrete mix placed each day unless directed otherwise by the Project Director. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mix, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
2. Slump: ASTM C 143; one test at point of discharge for each composite sample. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231; pressure method, for normal-weight concrete; ASTM C 173, volumetric method, for structural lightweight concrete; one test for each composite sample.
4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 4 deg C and below, when 27 deg C and above, and one test for each set of composite sample.
5. Unit Weight: ASTM C567; one test for each composite sample.
6. Compressive Test Specimens: ASTM C31/C31M; cast and laboratory cure one set of four standard cylinders specimens for each composite sample.
7. Compressive-Strength Tests: ASTM C39; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen tested at 56 days (reserve).

C. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete as approved by the Project Director.

D. Test results shall be reported in writing to COR, ready-mix producer, and the Contractor within 24 hours after testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspection agency, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-day, 28-day, and 56 day (reserve) tests.

E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by the COR but shall not be used as the sole basis for acceptance or rejection of concrete.

F. Additional Tests: The testing and inspecting agency shall make additional test of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by the COR. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed by the COR. Any concrete that does not comply with this specification will not be accepted. Concrete found to be deficient shall be corrected in a manner satisfactory to the COR. All

investigations, testing, load tests, and correction of deficiencies shall be performed at the expense of the Contractor and approved by the COR.

END OF SECTION 03300

F. CONCRETE MIX DESIGN SUBMITTAL FORM

Project: _____
City: _____
General Contractor: _____
Concrete Contractor: _____
Concrete Strength (Class): _____
Use (Describe): _____

Design Mix Information (Check One)

Based on Std. Deviation Analysis ☐
Trial Mix Text Data ☐

Design Characteristics

Density		kg/m^3
Strength		MPa (28 day)
Air		% specified

If trial mixes are used the Mix Design is proportioned to achieve f´cr = f´c + 8.3MPa
(9.7 MPa for 35MPa strength and higher strength at 28 days)

MATERIALS	Type/ Source	Specific Gravity	Weight (kg)	Absolute Volume (m^3)
Cement				
Fly Ash				
Silica Fume				
GGBF Slag				
Fine Aggregate				
Course Aggregate				
Water				
Air				
Other				
		Total		m^3

Water/Cementitious Material Ratio (kg water/kg cementitious material) = _____

ADMIXTURES	Manufacturer	Dosage (Metric)
Water Reducer		
Air Entraining Agent		
High Range Water Reducer		
Non-Corrosive Accelerator		
Other		

Slump before HRWR _____ mm
Slump after HRWR _____ mm

Standard Deviation Analysis (from experience records):

# of Test Cylinders Evaluated:	
Standard Deviation:	

The larger of: $f'cr = f'c + 1.34s$ or $f'cr = f'c + 2.33s-3.5$ (MPa)

(Refer to ACI 301 for increased deviation factor when less than 30 tests are available. Refer to ACI 318M Section 5.3 – Proportioning on the basis of field experience or trial mixtures, or both.)

LABORATORY TESTS DATA

Compressive strength

Age (days)	Mix #1	Mix #2	Mix #3
7	MPa	MPa	MPa
7	MPa	MPa	MPa
28	MPa	MPa	MPa
28	MPa	MPa	MPa
28 average	MPa	MPa	MPa

REQUIRED ATTACHMENTS:

Combined Aggregate Gradation Report ☐
Standard Deviation Analysis Summary or Trial Mixture Test ☐

Admixture Compatibility Certification Letter

Note: 8% - 18% aggregate required to be retained on each sieve except the top size and the #100

Submitted by :

Name: _____
Address: _____
_____
Phone #: _____
Main Plant Location: _____
Kilometers to Project: _____
Secondary Plant Location: _____
Kilometers to Project: _____
_____
Date: _____

SECTION 05511 - METAL STAIRS

PART 10 - GENERAL

10.1 SUMMARY

A. This Section includes the following:

1. Preassembled steel stairs with abrasive-coating-finished formed-metal treads.
2. Handrails and railings attached to metal stairs.

10.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide metal stairs capable of withstanding the following structural loads without exceeding the allowable design working stress of the materials involved, including anchors and connections. Apply each load to produce the maximum stress in each component of metal stairs.

1. Treads and Platforms of Metal Stairs: Capable of withstanding a uniform load of 4.79 kN/sq. m or a concentrated load of 1.33 kN on an area of 25.8 sq. cm, whichever produces the greater stress.
2. Stair Framing: Capable of withstanding stresses resulting from loads specified above in addition to stresses resulting from railing system loads.
3. Limit deflection of treads, platforms, and framing members to L/360 or 6.4 mm, whichever is less.

B. Structural Performance of Handrails and Railings: Provide handrails and railings complying with requirements in ASTM E 985 for structural performance, based on testing performed according to ASTM E 894 and ASTM E 935.

1. Top Rail of Guards: Capable of withstanding the following loads applied as indicated:

a. Concentrated load of 890 N applied at any point and in any direction.
b. Uniform load of 730 N/m applied horizontally and concurrently with uniform load of 1460 N/m applied vertically downward.
c. Concentrated and uniform loads above need not be assumed to act concurrently.

2. Handrails Not Serving as Top Rails: Capable of withstanding the following loads applied as indicated:

a. Concentrated load of 890 N applied at any point and in any direction.
b. Uniform load of 730 N/m applied in any direction.

c. Concentrated and uniform loads above need not be assumed to act concurrently.

3. Infill Area of Guards: Capable of withstanding a horizontal concentrated load of 890 N applied to 0.09 sq. m at any point in system, including panels, intermediate rails, balusters, or other elements composing infill area.

   a. Load above need not be assumed to act concurrently with loads on top rails in determining stress on guards.

4. In addition to the forgoing limitations and loadings, design and provide handrails and railings which will not deflect horizontally more than L/120 at any time and will recover from the deflection with a permanent deflection of no more than L/360, or 1.6mm, whichever is less.

10.3 SUBMITTALS

A. Product Data: For metal stairs and the following:

1. Prefilled metal-pan stair treads.
2. Precast concrete treads.
3. Epoxy-resin-filled stair treads.
4. Nonslip aggregates and nonslip-aggregate finishes.
5. Abrasive nosings.
6. Metal floor plate treads.
7. Paint products.
8. Grout.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Provide templates for anchors and bolts specified for installation under other Sections.
2. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

C. Welding certificates.

D. Qualification Data: For professional engineer and testing agency.

E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for stairs and railings.

1. Test railings according ASTM E 894 and ASTM E 935.

10.4 QUALITY ASSURANCE

A. Installer Qualifications: Arrange for metal stairs specified in this Section to be fabricated and installed by the same firm.

B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in a U.S. jurisdiction and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of metal stairs (including handrails and railing systems) that are similar to those indicated for this Project in material, design, and extent.

C. Fabricator Qualifications: A firm experienced in producing metal stairs similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel," and AWS D1.3, "Structural Welding Code--Sheet Steel."

10.5 COORDINATION

A. Coordinate installation of anchorages for metal stairs. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

PART 11 - PRODUCTS

11.1 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces, unless otherwise indicated. For components exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

11.2 FERROUS METALS

A. Metal Surfaces, General: Provide metal free from pitting, seam marks, roller marks, and other imperfections where exposed to view on finished units. Do not use steel sheet with variations in flatness exceeding those permitted by referenced standards for stretcher-leveled sheet.

B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

C. Steel Tubing: Cold-formed steel tubing complying with ASTM A 500.

D. Rolled-Steel Floor Plate: ASTM A 786/A 786M, rolled from plate complying with ASTM A 36/A 36M or ASTM A 283/A 283M, Grade C or D.

E. Uncoated, Hot-Rolled Steel Sheet: Commercial quality, complying with ASTM A 569/A 569M; or structural quality, complying with ASTM A 570/A 570M, Grade 30, unless another grade is required by design loads.

F. Galvanized Steel Sheet: ASTM A 653/A 653M, Z275 coating, either commercial quality or structural quality, Grade 230, unless another grade is required for design loads.

G. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

11.3 NONFERROUS METALS

A. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), Alloy 6063-T6.

B. Aluminum Castings: ASTM B 26/B 26M, Alloy 443.0-F.

C. Bronze Extrusions: ASTM B 455, Alloy UNS No. C38500 (extruded architectural bronze).

D. Bronze Castings: ASTM B 584, Alloy UNS No. C83600 (leaded red brass) or No. C84400 (leaded semired brass).

11.4 FASTENERS

A. Bolts and Nuts: Regular hexagon-head bolts, ASTM F 568M, Property Class 4.6; with hex nuts, ASTM A 563M; and, where indicated, flat washers.

B. Machine Screws: ASME B18.6.7M.

C. Lag Bolts: ASME B18.2.3.8M.

D. Plain Washers: Round, carbon steel, ASME B18.22M.

E. Lock Washers: Helical, spring type, carbon steel, ASME B18.21.2M.

F. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and equal to four times the load imposed when installed in concrete, as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.

1. Material: Alloy Group 1 or 2 stainless-steel bolts complying with ASTM F 738M and nuts complying with ASTM F 836M.

11.5 PAINT

A. Shop Primer for Ferrous Metal: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with performance requirements in FS TT-P-664, selected for good resistance to normal atmospheric corrosion, compatibility with finish paint systems indicated, and capability to provide a sound foundation for field-applied topcoats despite prolonged exposure.

B. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.

C. Bituminous Paint: Cold-applied asphalt mastic complying with SSPC-Paint 12, except containing no asbestos fibers or cold-applied asphalt emulsion complying with ASTM D 1187.

11.6 GROUT

A. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

11.7 FABRICATION, GENERAL

A. Provide complete stair assemblies, including metal framing, hangers, struts, handrails, railings, clips, brackets, bearing plates, and other components necessary to support and anchor stairs and platforms on supporting structure.

1. Join components by welding, unless otherwise indicated.
2. Use connections that maintain structural value of joined pieces.

B. NAAMM Stair Standard: Comply with "Recommended Voluntary Minimum Standards for Fixed Metal Stairs" in NAAMM AMP 510, "Metal Stairs Manual," for class of stair designated, unless more stringent requirements are indicated.

1. Generally throughout: Architectural class.
2. Industrial class, at locations where specifically indicated.

C. Shop Assembly: Preassemble stairs in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

D. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Shear and punch metals cleanly and accurately. Remove sharp or rough areas on exposed surfaces.

E. Ease exposed edges to a radius of approximately 1 mm, unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

F. Weld connections to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Weld exposed corners and seams continuously, unless otherwise indicated.
5. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

G. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flat-head (countersunk) screws or bolts. Locate joints where least conspicuous.

H. Fabricate joints that will be exposed to weather in a manner to exclude water, or provide weep holes where water may accumulate.

11.8 STEEL-FRAMED STAIRS

A. Stair Framing: Fabricate stringers of structural-steel channels, plates, or a combination of both, as indicated. Provide closures for exposed ends of stringers. Construct platforms of structural-steel channel headers and miscellaneous framing members as indicated. Bolt or weld headers to stringers; bolt or weld framing members to stringers and headers. If using bolts, fabricate and join so bolts are not exposed on finished surfaces.

1. Where stairs are enclosed by gypsum board shaft-wall assemblies, provide hanger rods to support landings from floor construction above.
2. Where masonry walls support metal stairs, provide temporary supporting struts designed for erecting steel stair components before installing masonry.

B. Metal Risers, Subtread Pans, and Subplatforms: Form to configurations shown from steel sheet of thickness necessary to support indicated loads, but not less than 1.7 mm.

1. Steel Sheet: Uncoated hot-rolled steel sheet, unless otherwise indicated.
2. Steel Sheet: Galvanized steel sheet, where indicated.

3. Directly weld metal pans to stringers; locate welds on side of subtreads to be concealed by concrete fill. Do not weld risers to stringers.
4. Attach risers and subtreads to stringers with brackets made of steel angles or bars. Weld brackets to stringers and attach metal pans to brackets by welding, riveting, or bolting.
5. Shape metal pans to include nosing integral with riser.
6. Attach extruded abrasive nosings to risers. Make nosings full width of tread, with noses flush with riser faces and level with tread surfaces.
7. Provide subplatforms of configuration indicated or, if not indicated, the same as subtreads. Weld subplatforms to platform framing.

C. Steel Floor Plate Treads, Risers, and Platforms: Form to configurations shown from abrasive-surface floor plate of thickness necessary to support indicated loads, but not less than 6.4 mm.

1. Abrasive-Surface Floor Plate: Fabricate from steel plate, with abrasive granules rolled into surface. Provide material with coefficient of friction of 0.6 or higher when tested according to ASTM C 1028.
2. Form treads with integral nosing and back edge stiffener. Weld steel supporting brackets to stringers and weld treads to brackets.
3. Fabricate platforms with integral nosings matching treads and weld to platform framing.
4. Surface: Serrated.

11.9 STEEL TUBE HANDRAILS AND RAILINGS

A. General: Fabricate handrails and railings to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thickness of tube, post spacings, and anchorage, but not less than that needed to withstand indicated loads.

B. Interconnect members by butt-welding or welding with internal connectors, at fabricator's option, unless otherwise indicated.

1. At tee and cross intersections, cope ends of intersecting members to fit contour of tube to which end is joined, and weld all around.

C. Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

D. Close exposed ends of handrail and railing members with prefabricated end fittings.

E. Provide wall returns at ends of wall-mounted handrails, unless otherwise indicated. Close ends of returns, unless clearance between end of rail and wall is 6 mm or less.

F. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, end closures, flanges, miscellaneous fittings, and anchors for interconnecting railings and for attaching to other work. Furnish inserts and other anchorage devices for connecting to concrete or masonry work.

1. Connect railing posts to stair framing by direct welding, unless otherwise indicated.

G. Fillers: Provide fillers made from steel plate, or other suitably crush-resistant material, where needed to transfer wall bracket loads through wall finishes to structural supports. Size fillers to suit wall finish thicknesses and to produce adequate bearing area to prevent bracket rotation and overstressing of substrate.

H. For galvanized handrails and railings, provide galvanized fittings, brackets, fasteners, sleeves, and other ferrous-metal components.

I. For nongalvanized handrails and railings, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves, except galvanize anchors embedded in concrete construction.

11.10 STAIR HANDRAILS AND RAILINGS

A. Comply with applicable requirements in Division 5 Section "Pipe and Tube Railings" and as follows:

1. Fabricate newels of steel tubing and provide newel caps of pressed steel, as shown.
2. Bend railings at corners, rail returns, and wall returns, instead of using prefabricated fittings.
3. Connect railing posts to stair framing by direct welding, unless otherwise indicated.

11.11 FINISHES

A. Finish metal stairs after assembly and comply with NAAMM'S "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Galvanizing: Hot-dip galvanize items as indicated to comply with applicable standard listed below:

1. ASTM A 123, for galvanizing both fabricated and unfabricated iron and steel products made of uncoated rolled, pressed, and forged shapes, plates, bars, and strips 0.76 mm thick and heavier.
2. ASTM A 153/A 153M, for galvanizing steel and iron hardware.

3. Fill vent and drain holes that will be exposed in finished work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.

C. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface-preparation specifications and environmental exposure conditions of installed products:

1. Interiors (SSPC Zone 1A): SSPC SP 3, "Power Tool Cleaning."

D. Apply shop primer to prepared surfaces of metal stair components, unless galvanized or otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1," for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.

PART 12 - EXECUTION

12.1 INSTALLATION, GENERAL

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal stairs to in-place construction. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal stairs. Set units accurately in location, alignment, and elevation, measured from established lines and levels and free from rack.

C. Install metal stairs by welding stair framing to steel structure or to weld plates cast into concrete, unless otherwise indicated.

D. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry.

E. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

F. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.

4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

12.2 INSTALLING STEEL TUBE RAILINGS AND HANDRAILS

A. Adjust handrails and railing systems before anchoring to ensure matching alignment at abutting joints. Space posts at spacing indicated or, if not indicated, as required by design loads. Plumb posts in each direction. Secure posts and railing ends to building construction as follows:

1. Anchor posts to steel by welding directly to steel supporting members.
2. Anchor handrail ends to concrete and masonry with steel round flanges welded to rail ends and anchored with postinstalled anchors and bolts.

B. Attach handrails to wall with wall brackets. Provide bracket with 38-mm clearance from inside face of handrail and finished wall surface. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads. Secure wall brackets to building construction as follows:

1. Use type of bracket with flange tapped for concealed anchorage to threaded hanger bolt.
2. For concrete and masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.

12.3 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces, apply by brush or spray to provide a minimum 0.05-mm dry film thickness.

B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Division 9 Section "Painting."

C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 05511

SECTION 09912 - PAINTING

PART 13 - GENERAL

13.1 SUMMARY

A. This Section includes surface preparation and field painting of exposed exterior and interior items and surfaces.

1. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.

B. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, COR will select from standard colors and finishes available.

1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron supports, and surfaces of mechanical and electrical equipment that do not have a factory-applied final finish.

C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.

1. Prefinished items include the following factory-finished components:

a. Architectural woodwork.
b. Acoustical wall panels.
c. Metal lockers.
d. Elevator equipment.
e. Finished mechanical and electrical equipment.
f. Light fixtures.

2. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:

a. Foundation spaces.
b. Furred areas.
c. Ceiling plenums.
d. Utility tunnels.
e. Pipe spaces.
f. Duct shafts.
g. Elevator shafts.

3. Finished metal surfaces include the following:

    a. Anodized aluminum.
    b. Stainless steel.
    c. Chromium plate.
    d. Copper and copper alloys.
    e. Bronze and brass.

4. Operating parts include moving parts of operating equipment and the following:

    a. Valve and damper operators.
    b. Linkages.
    c. Sensing devices.
    d. Motor and fan shafts.

5. Labels: Do not paint over UL, FMG, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

13.2 DEFINITIONS

A. General: Standard coating terms defined in ASTM D 16 apply to this Section.

1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
2. Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
3. Semi-gloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
4. Full gloss refers to high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

13.3 SUBMITTALS

A. Product Data: For each type of product indicated.

1. Include manufacturers' product data for paints, including printed statement of VOC content and chemical components.
2. Include manufacturers' MSDS information for each product.
3. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.

4. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material.

B. Samples for Initial Selection: For each type of topcoat product indicated.

C. Samples for Verification: For each type of paint system and in each color and gloss of topcoat indicated.

1. Submit Samples on rigid backing, 8 inches 200 mm square.
2. Step coats on Samples to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

D. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.

13.4 QUALITY ASSURANCE

A. Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this project, whose work has resulted in applications with a record of successful in-service performance.

B. Source Limitations: Obtain block fillers, primers, and undercoat for each coating system from the same manufacturer as the finish coats.

C. Environmental Regulations: Comply with Government, regulations limiting volatile organic compound (VOC) content in coating materials, related to coating materials and application methods, as current at time of performance of the work.

1. Paints and coatings listed in Schedules do not necessarily comply with environmental regulations in force at the project site. In such cases, subject to acceptance by Government, provide manufacturer's equivalent or replacement product, as verified by compliance with submittal requirements specified above.

D. Pre-installation Conference: Before beginning preparation of samples, meet with Government and appropriate consultants, and other concerned entities.

1. Review requirements for shop-priming, compatibility of each coating material with substrates and other coatings, and the suitability of each specified paint system for the substrates and other field conditions indicated.

2. Record discussions of conference, including decisions and agreements or disagreements reached, and furnish a copy for each attendee. If substantial disagreements exist at the conclusion of the conference, determine how disagreements will be resolved and set a date for reconvening the conference.

E. Benchmark Samples (Mockups): Provide a full-coat benchmark finish sample for each type of coating and substrate required. Comply with procedures specified in PDCA P5. Duplicate finish of approved sample Submittals.

1. Architect will select one room or surface to represent surfaces and conditions for application of each type of coating and substrate.

   a. Wall Surfaces: Provide samples on at least 3 sqm.
   b. Small Areas and Items: Architect will designate items or areas required.

2. Apply benchmark samples, according to requirements for the completed work, after permanent lighting and other environmental services have been activated. Provide required sheen, color, and texture on each surface.

3. Final approval of colors will be from benchmark samples.

13.5 PROJECT CONDITIONS

A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:

1. Product name or title of material.
2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.
4. Contents by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.
8. VOC content.

13.6 Keep storage area neat and orderly. Remove oily rags and waste daily.

A. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 7 deg C. Maintain storage containers in a clean condition, free of foreign materials and residue.

B. Apply waterborne paints only when temperatures of surfaces to be painted and surrounding air are between 10 and 32 deg C.

C. Apply solvent-thinned paints only when temperatures of surfaces to be painted and surrounding air are between 7 and 35 deg C.

D. Do not apply paint in rain, fog, or mist; or when relative humidity exceeds 85 percent; or at temperatures less than 3 deg C above the dew point; or to damp or wet surfaces.

PART 14 - PRODUCTS

14.1 MANUFACTURERS

A. Provide paint products by one of the following manufacturers:

1. Benjamin Moore
2. PPG Industries
3. Sherwin-Williams

B. Special Coatings:

1. Carboline Company (Carboline)
2. Du Pont Company High Performance Coatings (Du Pont)
3. Tnemec Company (Tnemec)

14.2 PAINT MATERIALS, GENERAL

A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.

14.3 PREPARATORY COATS

A. Concrete Unit Masonry Block Filler: High-performance latex block filler of finish coat manufacturer and recommended in writing by manufacturer for use with finish coat and on substrate indicated.

B. Exterior Primer: Exterior alkyd or latex-based primer of finish coat manufacturer and recommended in writing by manufacturer for use with finish coat and on substrate indicated.

1. Ferrous-Metal and Aluminum Substrates: Rust-inhibitive metal primer.
2. Zinc-Coated Metal Substrates: Galvanized metal primer.
3. Where manufacturer does not recommend a separate primer formulation on substrate indicated, use paint specified for finish coat.

C. Interior Primer: Interior latex-based or alkyd primer of finish coat manufacturer and recommended in writing by manufacturer for use with finish coat and on substrate indicated.

1. Ferrous-Metal Substrates: Quick drying, rust-inhibitive metal primer.
2. Zinc-Coated Metal Substrates: Galvanized metal primer.
3. Where manufacturer does not recommend a separate primer formulation on substrate indicated, use paint specified for finish coat.

14.4 EXTERIOR FINISH COATS

A. Exterior Flat Acrylic Paint.

B. Exterior Semigloss Acrylic Enamel.

C. Exterior Full-Gloss Acrylic Enamel for Concrete, and Masonry.

D. Exterior Full-Gloss Acrylic Enamel for Ferrous and Other Metals.

E. Exterior Full-Gloss Alkyd Enamel.

14.5 INTERIOR FINISH COATS

A. Interior Flat Acrylic Paint.

B. Interior Flat Latex-Emulsion Size.

C. Interior Semigloss Acrylic Enamel.

D. Interior Full-Gloss Acrylic Enamel.

E. Interior Full-Gloss Alkyd Enamel for Gypsum Board.

F. Interior Full-Gloss Alkyd Enamel for Wood and Metal Surfaces.

14.6 INTERIOR WOOD STAINS AND VARNISHES

A. Open-Grain Wood Filler.

B. Interior Wood Stain: Alkyd based.

C. Interior Alkyd- or Polyurethane-Based Clear Satin Varnish.

D. Interior Waterborne Clear Satin Varnish: Acrylic-based polyurethane.

E. Interior Waterborne Clear Gloss Varnish: Acrylic-based polyurethane.

F. Paste Wax: As recommended by manufacturer.

PART 15 - EXECUTION

15.1 APPLICATION

A. Comply with procedures specified in PDCA P4 for inspection and acceptance of surfaces to be painted.

B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

C. Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of the item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.

D. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.

1. Provide barrier coats over incompatible primers or remove and reprime.
2. Cementitious Materials: Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.
3. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.

a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.

b. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and back sides of wood, including cabinets, counters, cases, and paneling.
c. If transparent finish is required, backprime with spar varnish.
d. Backprime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on back side.
e. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.

4. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC's recommendations.

a. Blast steel surfaces clean as recommended by paint system manufacturer and according to SSPC-SP 6/NACE No. 3, SSPC-SP 10/NACE No. 2.
b. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
c. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with same primer as the shop coat.

5. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.

E. Material Preparation:

1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.

F. Exposed Surfaces: Include areas visible when permanent or built-in fixtures, grilles, convector covers, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.

1. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
2. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
3. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.

4. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
5. Finish interior of wall and base cabinets and similar field-finished casework to match exterior.

G. Sand lightly between each succeeding enamel or varnish coat.

H. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. Omit primer over metal surfaces that have been shop primed and touchup painted.
2. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance.

I. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.

J. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide total dry film thickness of the entire system as recommended by manufacturer.

K. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and occupied spaces.

L. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.

M. Prime Coats: Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.

N. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

O. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.

P. Stipple Enamel Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling, such as laps, irregularity in texture, skid marks, or other surface imperfections.

15.2 CLEANING AND PROTECTING

A. At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.

B. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by COR.

C. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.

1. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

15.3 PAINT SCHEDULES

A. Wherever more than one coat of paint is called for, paint with completely separate coats with the manufacturer’s minimum drying time between coats.

1. Application of separate coats, with manufacturers dry time between, is imperative and absolute. Drying time between coats is mandatory and not to be waived or modified.
2. Under no circumstances is the number of coats to be combined into a lesser number with an, “equivalent” thickness to attempt to equal separate coats, applied individually.
3. Applications called, “Equivalent”, with fewer than the specified number of coats, but equal to the total thickness, are not acceptable.
4. To assure performance, keep a record of application of each coat, each location, with dates of application, substrate, type of paint, names of applicators, and ambient conditions. Submit the record to the Government for review and acceptance in authorizing payment for the work.

15.4 EXTERIOR PAINT SCHEDULE

A. SYSTEM NO. 1.

1. High Performance Coating Over Exposed To View Shop Primed or Galvanized Steel Surfaces:
   a. Structural components, equipment supports, bollards, etc.
2. Certify compatibility with shop applied primers requirements specified in Part I
3. Observe paint manufacturer's limitations on elapsed time between coats.
4. Provide two coats over primer (first coat) as follows.

a. Intermediate Coat: High performance epoxy coating formulated for use over exterior primed or galvanized steel, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of 2.0 and 3.0 mils.
   1) Tnemec 27FC Typoxy

b. Finish Coat: Aliphatic acrylic polyurethane enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness range of 2.0 to 3.0 mils.
   1) Tnemec Series 73 (semi gloss) Enduro Shield III

B. SYSTEM NO. 2

1. Premium, Full Gloss. Alkyd Enamel Finish: Apply at the fallowing surfaces:
   a. Exposed surfaces (exterior and interior) of exterior shop primed hollow metal door and frame assemblies.
   b. Exposed surfaces (exterior and interior) of shop primed overhead coiling door curtains and other exposed overhead coiling door components.

2. Touch-up shop applied primer before applying finish coats. Provide two finish coats over a shop applied primer
   a. First and Second Finish Coats: Premium quality, full gloss, exterior, alkyd enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.5 mils.
      1) Moore IronClad Quick-Dry Industrial Enamel #071
      2) Tnemec Series 23, Enduratone

15.5 INTERIOR PAINT SCHEDULE General: Provide the following paint systems for the various substrates, as indicated. Apply additional coats when undercoats, previous coatings or other conditions show through the final coat, until the cured film is of uniform coating finish, color and appearance.

A. SYSTEM NO. 3

1. Semi-Gloss, two component Polyester - Epoxy Coating over Concrete.
   a. Apply over concrete wall and column surfaces where sanitary conditions must be maintained, where subject to water, and as scheduled

2. Provide two coats over a primer as follows:
   a. Primer: Acrylic primer spread at rate recommended by manufacturer.
      1) Moore: Regal first coat interior latex primer & underbody #216

   b. Second Coat: Epoxy enamel base and polyester-resin hardener, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.4 mils.
      1) Moore: Iron Clad Tile Like Catalyzed Coating #371

c. Finish Coat: Semigloss, clear epoxy glaze and polyester resin hardener, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.9 mils.
   1) Moore Iron Clad Tile-Like Clear Glaze Semi-Gloss

B. SYSTEM NO. 4

1. Semi-Gloss, Acrylic Enamel over Concrete.
   a. Apply over concrete wall and column surfaces scheduled to receive paint other than system 3 and generally at the following locations:
      1) Stairs, service corridors and service areas on each floor.
      2) Locker rooms, athletic areas, workrooms.

2. Provide two coats over a primer as follows:
   a. Primer: Alkaki-resistant, acrylic latex interior primer spread at rate recommended by manufacturer to achieve a total dry film thickness of not less than 1.0 mil.
      1) Moore: Regal first coat interior latex primer & underbody #216
      2) PPG: 6-2 Speedhide Interior Quick Drying Latex Sealer

   b. First and Second Coats: Semigloss.acrylic-latex interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils.
      1) Moore: Moore's Regal AquaGlo Vinyl-Acrylic Latex Enamel #333
      2) 88-110 Satinhide Interior Enamel Wall &Trim LO-Lustre Semi-Gloss Latex.

C. SYSTEM NO. 5

1. Flat Acrylic over Concrete.
   a. Apply over concrete wall and column surfaces scheduled to receive paint not included in Systems No. 3 or 4

2. Provide one finish coat over a primer as follows:
   a. Primer: Alkaki-resistant, acrylic latex interior primer spread at rate recommended by manufacturer to achieve a total dry film thickness of not less than 1.0 mil.
      1) Moore: Regal first coat interior latex primer & underbody #216
      2) PPG: 6-2 Speedhide Interior Quick Drying Latex Sealer

   b. Finish Coat: Flat, latex based, interior paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils.
      1) Moore: Moore's Regal Wall Satin #215
      2) PPG: 80 Line Wallhide Interior Wall flat latex paint.

D. SYSTEM NO. 6

1. Flat Acrylic over Concrete with leveling coat.
   a. Apply at concrete ceiling surfaces scheduled to receive leveling coat.

2. Provide vinyl-base leveling coat with primer and one finish coat, as follows:
   a. Primer: Alkali-resistant, acrylic-latex interior primer spread at rate recommended by manufacturer to achieve a total dry film thickness of not less than 1.4 mils.
      1) Moore: Regal First Coat Interior Latex Primer & Underbody #216
      2) PPG: 6-2 Speedhide Interior Quick Drying Latex Sealer.

   b. Finish Coat: Flat, acrylic-latex, interior paint spread at rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.3 mils.
      1) Moore: Regal Wall Satin #215
      2) PPG: 80 Line Wallhide Interior Wall Flat Latex Paint

E. SYSTEM NO. 7

1. Semi-Gloss, Two Component, Polyester-Epoxy Coating over Concrete Masonry Units.
   a. Apply over concrete masonry units subject to water and elsewhere where scheduled.

2. Provide two finish coats over a block filler as follows:
   a. Block Filler: High performance, latex based, block filler applied rate recommended by manufacturer to achieve a total dry film thickness of not less than 5.0 mils.
      1) Moore: Moorcraft Interior & Exterior Block Filler #

   b. Second Coat: Epoxy enamel base and polyester resin hardener, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.4 mils.
      1) Moore: IronClad Tile-Like Catalyzed Coating #371

   c. Finish Coat: Semigloss, clear epoxy glaze and polyester resin hardener, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.9 mils.
      1) Moore Iron Clad Tile-Like Clear Glaze Semi-Gloss 370-02

F. SYSTEM NO. 8

1. Semi-Gloss, Acrylic-Enamel over Concrete Masonry Units.
   a. Apply over concrete masonry units, where scheduled, generally at the following locations:

1) Stairs, service corridors.
2) Locker rooms, athletic spaces and toilet areas.

2. Provide two finish coats over a block filler as follows:
   a. Block Filler: High performance, latex based, block filler applied rate recommended by manufacturer to achieve a total dry film thickness of not less than 5.0 mils.
      1) Moore: Moorcraft Interior & Exterior Block Filler #173
      2) PPG: 6-7 Speedhide Interior/Exterior Masonry Block Filler

   b. First and Second Coats: Semigloss, acrylic-latex, interior applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils.
      1) Moore: Moore's Regal AquaGlo Vinyl-Acrylic latex Enamel #333
      2) PPG: 88-110 Satinhide Interior Enamel Wall & Trim Lo-Lustre Semi-Gloss Latex.

G. SYSTEM NO. 9

1. Flat, Acrylic-Enamel over Concrete Masonry Units.
   a. Apply over concrete masonry units, where scheduled, but not included in Systems 7 and 8.

2. Provide two finish coats over a block filler as follows:
   a. Block Filler: High performance, latex based, block filler applied rate recommended by manufacturer to achieve a total dry film thickness of not less than 5.0 mils.
      1) Moore: Moorcraft Interior & Exterior Block Filler #173
      2) PPG: 6-7 Speedhide Interior/Exterior Masonry Block Filler
   b. First and Finish Coats: Flat, latex-based, interior paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.5 mils.
      1) Moore: Regal Wall satin #215
      2) PPG: 80 Line Wallhide Interior Wall Flat Latex Paint.

H. SYSTEM NO. 10

1. Semi-gloss, Acrylic-Enamel over Gypsum Board.
   a. Apply at exposed gypsum board wall surfaces scheduled to receive paint at the following locations:
      1) Stairs and service corridors
      2) Locker rooms, athletic spaces, toilets.

2. Provide two finish coats over a primer as follows:
   a. Primer: Latex based interior applied rate recommended by manufacturer to achieve a total dry film thickness of not less than 1.2 mils.

1) Moore: Regal First Coat Interior Latex Primer & Underbody #216
2) PPG: 17-10 Quick-Drying Interior Latex Primer Sealer.

b. First and Second Coats: Semi-gloss, acrylic-latex- interior paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils.
1) Moore: Moore's Regal AquaGlo Vinyl-Acrylic Latex enamel #333
2) PPG: 89-10 Satinhide Interior enamel wall& Trim Lo-Lustre semi-Gloss Latex.

I. SYSTEM NO. 11

1. Low- Lustre, Acrylic-Enamel over Gypsum Board.
a. Apply at exposed gypsum board wall surfaces scheduled to receive low luster, or satin finish paint.

2. Provide two finish coats over a primer as follows:
a. Primer: Latex based interior applied rate recommended by manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
1) Moore: Regal First Coat Interior Latex Primer & Underbody #216
2) PPG: 17-10 Quick-Drying Interior Latex Primer Sealer.

b. First and Second Coats: Low-Lustre (eggshell or satin), acrylic-latex-interior paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.8 mils.
1) Moore: Moore's Regal AquaVelvet #319
2) PPG: 89-Line Manor Hall Eggshell Latex Wall and Trim Enamel

J. SYSTEM NO. 12

1. Flat, Acrylic-Enamel over Gypsum Board.
a. Apply at exposed gypsum board wall surfaces scheduled to receive paint but not included in Systems 10 and 11.

2. Provide one finish coat over a primer as follows:
a. Primer: Latex based interior applied rate recommended by manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
1) Moore: Regal First Coat Interior Latex Primer & Underbody #216
2) PPG: 17-10 Quick-Drying Interior Latex Primer Sealer.
b. Finish Coat: Flat, acrylic-latex- interior paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.3 mils.
1) Moore: Regal Wall Satin #215AquaGlo Vinyl-Acrylic Latex enamel #333
2) PPG: 80 Line Wallhide Interior Wall Flat Latex

K. SYSTEM NO. 13

1. Low-Lustre, Acrylic Enamel over Steel Surfaces:
   a. Apply to steel doors and frames, metal trim and other miscellaneous metal items except surfaces included in System 14.

2. Provide two finish coats over primer.
   a. Primer: Quick drying rust inhibiting alkyd based or epoxy metal primer, as recommended by the manufacturer for this substrate, applied at a rate recommended by the manufacturer to achieve a dry film thickness of not less than 1.5 mils.
      1) Moore: IronClad Retardo Rust inhibitive paint #163
      2) PPG: 6-208 Speedhide Interior/Exterior rust inhibitive steel primer.
   b. First and Second Coats: Low luster (eggshell or satin) acrylic-latex, interior enamel applied at spread rate recommended by the manufacturer to achieve a dry film thickness of not less than 2.8 mils.
      1) Moore: Moore's Regal AquaVelvet #319
      2) PPG: 89-Line Manor Hall Eggshell Latex Wall and Trim Enamel

L. SYSTEM NO. 14

1. Semi-gloss alkyd enamel over steel surfaces:
   a. Apply to steel surfaces scheduled to be painted, at the following locations:
      1) Steel doors and frames not included in Systems 12 or 13.
      2) Steel stair components, ladders, railings, and handrails.
      3) Metal trim and other miscellaneous items including mechanical and electrical.

2. Provide one finish coat over an undercoat and an alkyd or latex primer. Except for touch up, primer is not required over shop-primed items.
   a. Alkyd Primer: Quick drying, rust inhibitive, alkyd based or epoxy metal primer, as recommended by the manufacturer for this substrate, applied at a rate recommended by the manufacturer to achieve a dry film thickness of not less than 1.5 mils.
      1) Moore: IronClad Retardo Rust inhibitive paint #163
      2) PPG: 6-208 Speedhide Interior/Exterior rust inhibitive steel primer.
      3) S-W: Kem Kromik Metal Primer B50N2/B50W1

   b. Latex Primer:Alkyd-modified, acrylic, rust inhibitive latex primer, as recommended by the manufacturer for this substrate, applied at a rate recommended by the manufacturer to achieve a dry film thickness of not less than 1.5 mils.
      1) Moore: Retard-X do Rust inhibitive Latex primer #162
      2) PPG: 6-208 Red inhibitive metal primer.

c. Undercoat: Alkyd interior enamel undercoat or semi-gloss interior alkyd enamel finish coat, Alkyd Primer: Quick drying, rust inhibitive, alkyd based or epoxy metal primer, as recommended by the manufacturer for this substrate, applied at a rate recommended by the manufacturer to achieve a dry film thickness of not less than 1.2 mils.
   1) Moore: Moore's alkyd Enamel Underbody #217
   2) PPG: 6-6 Speedhide Interior Quick Drying Enamel Undercoater
   3) S-W: Pro-Mar 200 Interior Alkyd Semi-Gloss Enamel B34W200

d. Finish Coat: Low –odor, semi-gloss, alkyd interior enamel applied at, a spreading rate as recommended by the manufacturer for this substrate, to achieve a dry film thickness of not less than 1.4 mils.
   1) Moore: Alkyd Dulamel #207
   2) PPG: 27 Line Wallhide Low Odor Interior Enamel Wall and Trim Semi-Gloss Oil
   3) S-S: Classic 99 Interior/Exterior Semi-gloss Alkyd Enamel A-40 Series.

M. SYSTEM NO. 15

1. Waterborne Satin –Varnish Finish:
   a. Apply at hardwood surfaces to receive transparent finish, but not scheduled to receive shop-applied finish by casework fabricator.

2. Provide two finish coats of a waterborne, clear satin varnish over sealer coat and a waterborne, interior wood stain. Wipe wood filler before applying stain, if recommended by the manufacturer for wood species indicated.

   a. Stain Coat: Waterborne, interior wood stain applied at spreading rate recommended by the manufacturer.
      1) Moore: Benwood Penetrating Stain #234
      2) PPG: 77-302 Rez Interior Semi-transparent Stain.

   b. Sealer Coat: Clear sanding sealer applied at spreading rate recommended by the manufacturer.
      1) Moore: (None recommended)
      2) PPG: 77-Rez Interior Quick Drying Sealer and Finish.

   c. First and Second Finish Coats: Waterborne, varnish finish applied at spreading rate recommended by manufacturer.
      1) Moore: Stays Clear Acrylic Polyurethane #423, Satin
      2) PPG: Rez Satin Acrylic Clear Polyurethane

N. SYSTEM NO.16

1. Low-Luster, Acrylic-Enamel over Wood.
   a. Apply at exposed wood and construction panel surfaces not scheduled to receive transparent, natural, finish.

2. Provide two finish coats over a primer.
   a. Primer: Alkyd, or acrylic-latex based, interior wood primer, as recommended by the manufacturer for this substrate, applied at a rate recommended by the manufacturer to achieve a dry film thickness of not less than 1.4 mils.
      1) Moore: Moore's Alkyd enamel underbody #217
      2) PPG: 17-225 Quick Drying Enamel Undecoat

   b. First and Second Coats: Low-luster (eggshell or satin) acrylic latex interior enamel, applied at a rate recommended by the manufacturer to achieve a dry film thickness of not less than 2.8 mils.
      1) Moore: Moore's Regal Aqua Velvet #319
      2) PPG: 89 Line Manor Hall Interior Eggshell Latex Wall and Trim Enamel

O. SYSTEM NO.17

1. Semi-gloss, Alkyd Enamel over other Wood Surfaces.
   a. Apply at exposed wood and construction panel surfaces not scheduled to receive transparent, natural, finish, and not included in System No. 16.

2. Provide two finish coats over a primer.
   a. Primer: Alkyd, or -latex based, interior wood undercoater, as recommended by the manufacturer for this substrate, applied at a rate recommended by the manufacturer to achieve a dry film thickness of not less than 1.2 mils.
      1) Moore: Moore's Alkyd enamel underbody #217
      2) PPG: 17-225 Quick Drying Enamel Undecoat
      3) S-W: Pro Mar 200 Alkyd Enamel Undercoater B49W200

   b. First and Second Coats: Odorless, semigloss, interior enamel, applied at a rate recommended by the manufacturer to achieve a dry film thickness of not less than 2.4 mils.
      1) Moore: Alkyd Dulamel #207
      2) PPG: 27 Line Wallhide Low Odor Interior Enamel Wall and Trim Semi-Gloss Oil
      3) S-W: Classic 99 Interior/Exterior Semi-gloss Alkyd Enamel A-40 Series.

P. SYSTEM NO. 18

1. Two Component Epoxy Coating System for Concrete Floors
   a. Apply at exposed concrete floors in spaces requiring special high performance coating as scheduled.

2. Provide two finished coats. Prior to applying coating, condition floor according to coating manufacturer's instructions and recommendations.
   a. First and Second Coats: High gloss polyamide epoxy coating system applied at spreading rate as recommended by manufactured to achieve a total dry film thickness of not les than 2.5 mils per coat. Thin first coat per manufacturer's recommendations.
      1) Moore: Iron Clad Chemical and Water Resistant Epoxy Enamel #182
      2) PPG: 97-1 Series Aquapon Polyamide- Epoxy Ready Mixed Colors
      3) Tnemec: Series 67 Tneme-Tread.

Q. SYSTEM NO. 19

1. Concrete Sealer (chemical type).
   a. Apply at concrete floor surfaces as follows:
      1) Indicated to receive glue down carpet installation.
      2) Surfaces indicated to be sealed

2. Provide transparent, colorless, penetrating liquid hardener and sealer of proven compatibility with carpet adhesive.
   a. Prepare surfaces and apply not less than two coats complying strictly with the manufacturer's instructions and recommendations.
      1) "Armotrop", by Anti-Hydro Co.
      2) "Sikafuard 70", by Sika Corp.
      3) "Thoro Penetrating Sealer", by Thoro System Products

END OF SECTION 09912

J. QUOTATION INFORMATION

A. QUALIFICATIONS OF OFFERORS

Offerors/quoters must be technically qualified and financially responsible to perform the work described in this solicitation. At a minimum, each Offeror/Quoter must meet the following requirements:

(1) Be able to understand written and spoken English;
(2) Have an established business with a permanent address and telephone listing;
(3) Be able to demonstrate prior construction experience with suitable references;
(4) Have the necessary personnel, equipment and financial resources available to perform the work;
(5) Have all licenses and permits required by local law;
(6) Meet all local insurance requirements;
(7) Have the ability to obtain or to post adequate performance security, such as bonds, irrevocable letters of credit or guarantees issued by a reputable financial institution;
(8) Have no adverse criminal record; and
(9) Have no political or business affiliation which could be considered contrary to the interests of the United States.

B. SUBMISSION OF QUOTATIONS

This solicitation is for the performance of the construction services described in SCOPE OF WORK, and the Attachments which are a part of this request for quotation.

Each quotation must consist of the following:

Volume	Title	No. of Copies
I	Standard Form 1442 including a completed Attachment 2, "BREAKDOWN OF PROPOSAL PRICE BY DIVISIONS OF SPECIFICATIONS" and BID FORM	1
II	Performance schedule in the form of a "bar chart" and Business Management/Technical Proposal	1

Submit the complete quotation to the address indicated on Standard Form 1442 (block 8), if mailed, or the address set forth below, if hand delivered.

U.S Embassy
Al Kindi Street
Baghdad International Zone, Iraq
(marked for the attention of the
"Contracting Officer – Proposal S-IZ100-12-R-0022 Enclosed")

The Offeror/Quoter shall identify and explain/justify any deviations, exceptions, or conditional assumptions taken with respect to any of the instructions or requirements of this request for quotation in the appropriate volume of the offer.

Volume II: Performance schedule and Business Management/Technical Proposal.

(a) Present the performance schedule in the form of a "bar chart" indicating when the various portions of the work will be commenced and completed within the required schedule. This bar chart shall be in sufficient detail to clearly show each segregable portion of work and its planned commencement and completion date.

(b) The Business Management/Technical Proposal shall be in two parts, including the following information:

Proposed Work Information - Provide the following:

(1) A list of the names, addresses and telephone numbers of the owners, partners, and principal officers of the Offeror;

(2) The name and address of the Offeror's field superintendent for this project;

(3) A list of the names, addresses, and telephone numbers of subcontractors and principal materials suppliers to be used on the project, indicating what portions of the work will be performed by them; and,

Experience and Past Performance - List all contracts and subcontracts your company has held over the past three years for the same or similar work. Provide the following information for each contract and subcontract:

(1) Customer's name, address, and telephone numbers of customer's lead contract and technical personnel;

(2) Contract number and type;

(3) Date of the contract award place(s) of performance, and completion dates; Contract dollar value;

(4) Brief description of the work, including responsibilities; and

(5) Any litigation currently in process or occurring within last 5 years.

LICENSES

(1) A copy of the company registration with the Iraqi Ministry of Trade, or
(2) For foreign companies, a copy of the company registration with the Foreign Companies Section of the Iraqi Ministry of Trade,

INSURANCE & PAYMENT PROTECTION INFORMATION

(1) A statement identifying the insurance company from which the general liability insurance policy will be purchased if awarded the contract

C. 52.236-27 SITE VISIT (FEB 1995)

(a) The clauses at 52.236-2, Differing Site Conditions, and 52.236-3, Site Investigations and Conditions Affecting the Work, will be included in any contract awarded as a result of this solicitation. Accordingly, offerors or quoters are urged and expected to inspect the site where the work will be performed.

(b) A site visit has been scheduled for **10:00 hours on Monday, March 12, 2012.**

(c) **Participants will meet at the U. S. Embassy, Red CAC on Al Kindi Street, International Zone, Baghdad, Iraq.**

(d) In order to be admitted to the Site Visit, a Site Visit Registration form must be submitted by email to this address BaghdadGSOProcurement@state.gov to the attention of Desiree Tupper/Daler Boev no later than 12:00 noon (Baghdad Time) on Wednesday, March 7, 2012. No more than 1 person will be admitted from each company. The form is available for download from the Embassy web site at http://iraq.usembassy.gov/gso_procurement.html or you may request a copy of the form by email at BaghdadGSOProcurement@state.gov.

D. MAGNITUDE OF CONSTRUCTION PROJECT

It is anticipated that the range in price of this contract will be: between $25,000 and $100,000.

E. LATE QUOTATIONS. Late quotations shall be handled in accordance with FAR

F. 52.252-1 SOLICITATION PROVISIONS INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates the following provisions by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text

available. The offeror is cautioned that the listed provisions may include blocks that must be completed by the offeror and submitted with its quotation or offer. In lieu of submitting the full text of those provisions, the offeror may identify the provision by paragraph identifier and provide the appropriate information with its quotation or offer. Also, the full text of a solicitation provision may be accessed electronically at:

http://acquisition.gov/far/index.html/ or, http://farsite.hill.af.mil/search.htm

These addresses are subject to change. If the Federal Acquisition Regulation (FAR) is not available at the locations indicated above, use of an Internet "search engine" (such as, Yahoo, Infoseek, Alta Vista, etc.) is suggested to obtain the latest location of the most current FAR. http://www.statebuy.state.gov

FEDERAL ACQUISITION REGULATION (48 CFR CH. 1)

52.215-1 INSTRUCTIONS TO OFFERORS--COMPETITIVE ACQUISITION (JAN 2004), which is incorporated by reference into this solicitation.

THE FOLLOWING DOSAR PROVISION IS PROVIDED IN FULL TEXT:

652.228-74 DEFENSE BASE ACT INSURANCE RATES – LIMITATION (JUN 2006)]

(a) The Department of State has entered into a contract with an insurance carrier to provide Defense Base Act (DBA) insurance to Department of Sate covered contactor employees at a contracted rate. For the purposes of this provision, “covered contractor employees” includes the following individuals:

(1) United States citizens or residents;

(2) Individuals hired in the United States or its possessions, regardless of citizenship; and

(3) Local nationals and third country nationals where contract performance takes place in a country where there are no local workers’ compensation laws.

(b) In preparing the cost proposal, the bidder/offeror shall use the following rates in computing the cost for the DBA insurance:

Construction @ $5.50 per $100 of compensation.

(c) Bidders/Offerors shall compute the total compensation (direct salary plus differential, but excluding per diem, housing allowances) to be paid to covered contractor employees and the cost of DBA insurance in their bid/proposal using the foregoing rate. Bidders/offerors shall include the estimated DBA insurance costs in their proposed fixed price or estimated cost. However, the DBA insurance costs shall be identified in a separate line item in the bid proposal.”

K. EVALUATION CRITERIA

Award will be made to the lowest priced, acceptable, responsible quoter. The Government reserves the right to reject quotations that are unreasonably low or high in price.

The Government will determine acceptability by assessing the offeror's compliance with the terms of the RFQ. The Government will determine responsibility by analyzing whether the apparent successful quoter complies with the requirements of FAR 9.1, including:

- ability to comply with the required performance period, taking into consideration all existing commercial and governmental business commitments;
- satisfactory record of integrity and business ethics;
- necessary organization, experience, and skills or the ability to obtain them;
- necessary equipment and facilities or the ability to obtain them; and
- otherwise qualified and eligible to receive an award under applicable laws and regulations.

L. REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS OR QUOTERS

L.1 52.204-3 TAXPAYER IDENTIFICATION (OCT 1998)

(a) Definitions.

"Common parent", as used in this provision, means that corporate entity that owns or controls an affiliated group of corporations that files its Federal income tax returns on a consolidated basis, and of which the offeror is a member.

"Taxpayer Identification Number (TIN)", as used in this provision, means the number required by the IRS to be used by the offeror in reporting income tax and other returns. The TIN may be either a Social Security Number or an Employer Identification Number.

(b) All offerors must submit the information required in paragraphs (d)through (f) of this provision in order to comply with debt collection requirements of 31 U.S.C. 7701(c) and 3325 (d), reporting requirements of 26 USC 6041, 6041A, and 6050M and implementing regulations issued by the Internal Revenue Service (IRS). If the resulting contract is subject to the reporting requirements described in FAR 4.904, the failure or refusal by the offeror to furnish the information may result in a 31 percent reduction of payments otherwise due under the contract.

(c) The TIN may be used by the Government to collect and report on any delinquent amounts arising out of the offeror's relationship with the Government (3l USC 7701(c)(3)). If the resulting contract is subject to the payment reporting requirements described in FAR 4.904, the TIN provided hereunder may be matched with IRS records to verify the accuracy of the offeror's TIN.

(d) Taxpayer Identification Number (TIN).

TIN: _____
[ ] TIN has been applied for.
[ ] TIN is not required because:
[ ] Offeror is a nonresident alien, foreign corporation, or foreign partnership that does not have income effectively connected with the conduct of a trade or business in the U.S. and does not have an office or place of business or a fiscal paying agent in the U.S.;
[ ] Offeror is an agency or instrumentality of a foreign government;
[ ] Offeror is an agency or instrumentality of the Federal Government.

(e) Type of Organization.

[ ] Sole Proprietorship;
[ ] Partnership:
[ ] Corporate Entity (not tax exempt);

[ ] Corporate Entity (tax emempt);
[ ] Government entity (Federal, State, or local);
[ ] Foreign government;
[ ] International organization per 26 CFR 1.6049-4;
[ ] Other _____

(f) Common Parent.

[ ] Offeror is not owned or controlled by a common parent as defined in paragraph (a) of this clause.
[ ] Name and TIN of common parent;

Name _____
TIN _____

(End of provision)

L.2 52.204-6 CONTRACTOR IDENTIFICATION NUMBER -DATA UNIVERSAL NUMBERING SYSTEM (DUNS) NUMBER (OCT 2003)

(a) The offeror shall enter, in the block with its name and address on the cover page of its offer, the annotation "DUNS" or "DUNS+4" followed by the DUNS number or DUNS+4 that identifies the offeror's name and address exactly as stated in the offer. The DUNS number if a nine-digit number assigned by Dun and Bradstreet Information Services. The DUNS+4 is the DUNS number plus a 4-character suffix that may be assigned at the discretion of the offeror to establish additional CCR records for identifying alternative Electronic Funds Transfer (EFT) accounts (see Subpart 32.11) for the same parent company.

If the offeror does not have a DUNS number, it should contact Dun and Bradstreet directly to obtain one. An offeror may obtain a DUNS number-

- If located within the United States, by calling Dun and Bradstreet at 1-866-705-5711 or via the Internet at http://www.dnb.com; or

- If located outside the United States, by contacting the local Dun and Bradstreet office.

The offeror should be prepared to provide the following information:

- Company legal business name.
- Trade style, doing business, or other name by which your entity is commonly recognized.
- Company physical street address, city, state and Zip Code.
- Company mailing address, city, state and Zip Code (if separate from physical)
- Company telephone number

- Date the company was started.
- Number of employees at your location.
- Chief executive officer/key manager.
- Line of business (industry)
- Company Headquarters name and address (reporting relationship within your entity).

L.3 52.204-8 ANNUAL REPRESENTATIONS AND CERTIFICATIONS (NOV 2011)

(a) (1) The North American Industry Classification System (NAICS) codes for this acquisition are: 236220 for Construction Management for commercial and institutional buildings or warehouse construction; 237310 for Construction management for highways, roads, streets or bridges; 237990 for Construction Management for outdoor recreation facilities; 236118 for Construction Management for residential remodeling; 237110 for Construction Management for water and sewage lines and related structures.

(2) The small business size standard is $33.5 million**.**

(3) The small business size standard for a concern which submits an offer in its own name, other than on a construction or service contract, but which proposes to furnish a product which it did not itself manufacture, is 500 employees.

(b) (1) If the clause at 52.204-7, Central Contractor Registration, is included in this solicitation, paragraph (d) of this provision applies.

(2) If the clause at 52.204-7 is not included in this solicitation, and the offeror is currently registered in CCR, and has completed the ORCA electronically, the offeror may choose to use paragraph (d) of this provision instead of completing the corresponding individual representations and certifications in the solicitation. The offeror shall indicate which option applies by checking one of the following boxes:

[ ] (i) Paragraph (d) applies.

[ ] (ii) Paragraph (d) does not apply and the offeror has completed the individual representations and certifications in the solicitation.

(c) (1) The following representations or certifications in ORCA are applicable to this solicitation as indicated:

(i) 52.203-2, Certificate of Independent Price Determination. This provision applies to solicitations when a firm-fixed-price contract or fixed-price contract with economic price adjustment is contemplated, unless—

(A) The acquisition is to be made under the simplified acquisition procedures in Part 13;

(B) The solicitation is a request for technical proposals under two-step sealed bidding procedures; or

(C) The solicitation is for utility services for which rates are set by law or regulation.

(ii) 52.203-11, Certification and Disclosure Regarding Payments to Influence Certain Federal Transactions. This provision applies to solicitations expected to exceed $150,000.

(iii) 52.204-3, Taxpayer Identification. This provision applies to solicitations that do not include the clause at 52.204-7, Central Contractor Registration.

(iv) 52.204-5, Women-Owned Business (Other Than Small Business). This provision applies to solicitations that—

(A) Are not set aside for small business concerns;
(B) Exceed the simplified acquisition threshold; and
(C) Are for contracts that will be performed in the United States or its outlying areas.

(v) 52.209-2, Prohibition on Contracting with Inverted Domestic Corporations—Representation. This provision applies to solicitations using funds appropriated in fiscal years 2008, 2009, or 2010.

(vi) 52.209-5, Certification Regarding Responsibility Matters. This provision applies to solicitations where the contract value is expected to exceed the simplified acquisition threshold.

(vii) 52.214-14, Place of Performance—Sealed Bidding. This provision applies to invitations for bids except those in which the place of performance is specified by the Government.

(viii) 52.215-6, Place of Performance. This provision applies to solicitations unless the place of performance is specified by the Government.

(ix) 52.219-1, Small Business Program Representations (Basic & Alternate I). This provision applies to solicitations when the contract will be performed in the United States or its outlying areas.

(A) The basic provision applies when the solicitations are issued by other than DoD, NASA, and the Coast Guard.

(B) The provision with its Alternate I applies to solicitations issued by DoD, NASA, or the Coast Guard.

(x) 52.219-2, Equal Low Bids. This provision applies to solicitations when contracting by sealed bidding and the contract will be performed in the United States or its outlying areas.

(xi) 52.222-22, Previous Contracts and Compliance Reports. This provision applies to solicitations that include the clause at 52.222-26, Equal Opportunity.

(xii) 52.222-25, Affirmative Action Compliance. This provision applies to solicitations, other than those for construction, when the solicitation includes the clause at 52.222-26, Equal Opportunity.

(xiii) 52.222-38, Compliance with Veterans' Employment Reporting Requirements. This provision applies to solicitations when it is anticipated the contract award will exceed the simplified acquisition threshold and the contract is not for acquisition of commercial items.

(xiv) 52.223-1, Biobased Product Certification. This provision applies to solicitations that require the delivery or specify the use of USDA–designated items; or include the clause at 52.223-2, Affirmative Procurement of Biobased Products Under Service and Construction Contracts.

(xv) 52.223-4, Recovered Material Certification. This provision applies to solicitations that are for, or specify the use of, EPA–designated items.

(xvi) 52.225-2, Buy American Act Certificate. This provision applies to solicitations containing the clause at 52.225-1.

(xvii) 52.225-4, Buy American Act—Free Trade Agreements—Israeli Trade Act Certificate. (Basic, Alternate I, and Alternate II) This provision applies to solicitations containing the clause at 52.225-3.

(A) If the acquisition value is less than $25,000, the basic provision applies.

(B) If the acquisition value is $25,000 or more but is less than $50,000, the provision with its Alternate I applies.

(C) If the acquisition value is $50,000 or more but is less than $67,826, the provision with its Alternate II applies.

(xviii) 52.225-6, Trade Agreements Certificate. This provision applies to solicitations containing the clause at 52.225-5.

(xix) 52.225-20, Prohibition on Conducting Restricted Business Operations in Sudan—Certification. This provision applies to all solicitations.

(xx) 52.225-25, Prohibition on Contracting with Entities Engaging in Sanctioned Activities Relating to Iran—Representation and Certification. This provision applies to all solicitations.

(xxi) 52.226-2, Historically Black College or University and Minority Institution Representation. This provision applies to—

(A) Solicitations for research, studies, supplies, or services of the type normally acquired from higher educational institutions; and

(B) For DoD, NASA, and Coast Guard acquisitions, solicitations that contain the clause at 52.219-23, Notice of Price Evaluation Adjustment for Small Disadvantaged Business Concerns.

(2) The following certifications are applicable as indicated by the Contracting Officer:

__ (i) 52.219-22, Small Disadvantaged Business Status.

__ (A) Basic.

__ (B) Alternate I.

__ (ii) 52.222-18, Certification Regarding Knowledge of Child Labor for Listed End Products.

__ (iii) 52.222-48, Exemption from Application of the Service Contract Act to Contracts for Maintenance, Calibration, or Repair of Certain Equipment Certification.

__ (iv) 52.222-52, Exemption from Application of the Service Contract Act to Contracts for Certain Services–Certification.

__ (v) 52.223-9, with its Alternate I, Estimate of Percentage of Recovered Material Content for EPA–Designated Products (Alternate I only).

__ (vi) 52.227-6, Royalty Information.

__ (A) Basic.

__(B) Alternate I.

__ (vii) 52.227-15, Representation of Limited Rights Data and Restricted Computer Software.

(d) The offeror has completed the annual representations and certifications electronically via the Online Representations and Certifications Application (ORCA) website at http://orca.bpn.gov. After reviewing the ORCA database information, the offeror verifies by submission of the offer that the representations and certifications currently posted electronically that apply to this solicitation as indicated in paragraph (c) of this provision have been entered or updated within the last 12 months, are current, accurate, complete, and applicable to this solicitation (including the business size standard applicable to the NAICS code referenced for this solicitation), as of the date of this offer and are incorporated in this offer by reference (see FAR 4.1201); except for the changes identified below **[*offeror to insert changes, identifying change by clause number, title, date*]**. These amended representation(s) and/or certification(s) are also incorporated in this offer and are current, accurate, and complete as of the date of this offer.

FAR CLAUSE #	TITLE	DATE	CHANGE
_____	_____	_____	_____

Any changes provided by the offeror are applicable to this solicitation only, and do not result in an update to the representations and certifications posted on ORCA.

(End of provision)

L.4. 52.225-18 PLACE OF MANUFACTURE (SEPT 2006)

(a) *Definitions*. As used in this clause—

" Manufactured end product" means any end product in Federal Supply Classes (FSC) 1000-9999, except—

(1) FSC 5510, Lumber and Related Basic Wood Materials;
(2) Federal Supply Group (FSG) 87, Agricultural Supplies;
(3) FSG 88, Live Animals;
(4) FSG 89, Food and Related Consumables;
(5) FSC 9410, Crude Grades of Plant Materials;
(6) FSC 9430, Miscellaneous Crude Animal Products, Inedible;
(7) FSC 9440, Miscellaneous Crude Agricultural and Forestry Products;
(8) FSC 9610, Ores;
(9) FSC 9620, Minerals, Natural and Synthetic; and
(10) FSC 9630, Additive Metal Materials.

"Place of manufacture" means the place where an end product is assembled out of components, or otherwise made or processed from raw materials into the finished product that is to be provided to the Government. If a product is disassembled and reassembled, the place of reassembly is not the place of manufacture.

(b) For statistical purposes only, the offeror shall indicate whether the place of manufacture of the end products it expects to provide in response to this solicitation is predominantly—

(1) [ ] In the United States (Check this box if the total anticipated price of offered end products manufactured in the United States exceeds the total anticipated price of offered end products manufactured outside the United States); or
(2) [ ] Outside the United States.

L.5 AUTHORIZED CONTRACT ADMINISTRATOR

If the offeror does not fill-in the blanks below, the official who signed the offer will be deemed to be the offeror's representative for Contract Administration, which includes all matters pertaining to payments.

Name: _____

Address: _____

_____

Telephone Number: _____

L.6 652.228-70 DEFENSE BASE ACT – COVERED CONTRACTOR EMPLOYEES (JUN 2006)

(a) Bidders/offerors shall indicate below whether or not any of the following categories of employees will be employed on the resultant contract, and, if so, the number of such employees:

Category	**Yes/No**	**Number**
(1) United States citizens or residents		
(2) Individuals hired in the United States, regardless of citizenship		
(3) Local nationals or third country nationals where contract performance takes place in a country where there are no *local workers' compensation laws*		*Local nationals:* _____ *Third Country Nationals:* _____
(4) Local nationals or third country nationals where contract performance takes place in a country where there are *local workers' compensation laws*		*Local nationals:* _____ *Third Country Nationals:* _____

(b) The contracting officer has determined that for performance in the country of Iraq

☐ Workers' compensation laws exist that will cover local nationals and third country nationals.

☑ Workers' compensation laws do not exist that will cover local nationals and third country nationals.

(c) If the bidder/offeror has indicated "yes" in block (a)(4) of this provision, the bidder/offeror shall not purchase Defense Base Act insurance for those employees. However, the bidder/offeror shall assume liability toward the employees and their beneficiaries for war-hazard injury, death, capture, or detention, in accordance with the clause at FAR 52.228-4.

(d) If the bidder/offeror has indicated "yes" in blocks (a)(1), (2), or (3) of this provision, the bidder/offeror shall compute Defense Base Act insurance costs covering those employees pursuant to the terms of the contract between the Department of State and the Department's Defense Base Act insurance carrier at the rates specified in DOSAR 652.228-74, Defense Base Act Insurance Rates – Limitation. If DOSAR provision 652.228-74 is not included in this solicitation, the bidder/offeror shall notify the contracting officer before the closing date so that the solicitation can be amended accordingly.

L.7. 52.225-25 Prohibition on Contracting with Entities Engaging in Sanctioned Activities Relating to Iran—Representation and Certification. (Nov 2011)

(a) *Definitions.*

"Person"—

(1) Means—

(i) A natural person;

(ii) A corporation, business association, partnership, society, trust, financial institution, insurer, underwriter, guarantor, and any other business organization, any other nongovernmental entity, organization, or group, and any governmental entity operating as a business enterprise; and

(iii) Any successor to any entity described in paragraph (1)(ii) of this definition; and

(2) Does not include a government or governmental entity that is not operating as a business enterprise.

"Sensitive technology"—

(1) Means hardware, software, telecommunications equipment, or any other technology that is to be used specifically—

(i) To restrict the free flow of unbiased information in Iran; or

(ii) To disrupt, monitor, or otherwise restrict speech of the people of Iran; and

(2) Does not include information or informational materials the export of which the President does not have the authority to regulate or prohibit pursuant to section 203(b)(3) of the International Emergency Economic Powers Act (50 U.S.C. 1702(b)(3)).

(b) The offeror shall e-mail questions concerning sensitive technology to the Department of State at *CISADA106@state.gov*.

(c) Except as provided in paragraph (d) of this provision or if a waiver has been granted in accordance with 25.703-4, by submission of its offer, the offeror—

(1) Represents, to the best of its knowledge and belief, that the offeror does not export any sensitive technology to the government of Iran or any entities or individuals owned or controlled by, or acting on behalf or at the direction of, the government of Iran; and

(2) Certifies that the offeror, or any person owned or controlled by the offeror, does not engage in any activities for which sanctions may be imposed under section 5 of the Iran Sanctions Act. These sanctioned activities are in the areas of development of the petroleum resources of Iran, production of refined petroleum products in Iran, sale and provision of refined petroleum products to Iran, and contributing to Iran's ability to acquire or develop certain weapons or technologies.

(d) *Exception for trade agreements.* The representation requirement of paragraph (c)(1) and the certification requirement of paragraph (c)(2) of this provision do not apply if—

(1) This solicitation includes a trade agreements notice or certification (*e.g.*, 52.225-4, 52.225-6, 52.225-12, 52.225-24, or comparable agency provision); and

(2) The offeror has certified that all the offered products to be supplied are designated country end products or designated country construction material.

(End of provision)